DOCUMENT RESUME

ED 471 947 EC 309 367

AUTHOR	Cavenaugh, Brenda S.
TITLE	Relationship of Agency Structure and Client Characteristics to Rehabilitation Services and Outcomes for Consumers Who Are Blind.
INSTITUTION	Mississippi State Univ., Mississippi State. Rehabilitation Research and Training Center on Blindness and Low Vision.
SPONS AGENCY	National Inst. on Disability and Rehabilitation Research (ED/OSERS), Washington, DC.
PUB DATE	1999-06-00
NOTE	72p.
CONTRACT	H133B10003
AVAILABLE FROM	Mississippi State University Rehabilitation Research and Training Center on Blindness and Low Vision, P.O. Box 6189, Mississippi State, MS 39762. Tel: 662-325-2001; Fax: 662-325-8989; Web site: http://www.blind.msstate.edu.
PUB TYPE	Reports - Research (143)
EDRS PRICE	EDRS Price MF01/PC03 Plus Postage.
DESCRIPTORS	Adults; Agencies; *Blindness; Data Analysis; Data Interpretation; Employment Services; Income; Institutional Characteristics; *Job Placement; Postsecondary Education; Predictor Variables; *Rehabilitation Programs; Salaries; Special Programs; *State Agencies; State Surveys; *Supported Employment; *Vocational Rehabilitation

ABSTRACT

This report discusses the outcomes of a study that investigated differences in vocational rehabilitation (VR) services (expenditures, number, and duration) and outcomes (competitive sector placement and earnings) of consumers designated as legally blind in states with separate or combined (cross-disability) agencies. The sample included 35,396 consumer cases closed in the 50 states' VR systems in 1995 and 1996. Case data from 1995 were used to identify client disability and demographic characteristics related to competitive closure and to construct two covariates to control for these characteristics in the investigation of VR services and outcomes. A multivariate analysis of covariance using variables aggregated by state found no significant differences in the combined set of dependent variables across agency structure types. An analysis of covariables used to investigate differences in client earnings across agency structure types showed that client earnings at closure were significantly higher in separate agency states than in combined agency states when employing the Index of Work Disadvantage at Referral covariate, but not significantly higher when using the Demographic Predictor covariable. A second analysis of covariance determined that competitive sector placement rate was significantly higher in state agency states than in combined agency states. (Contains 82 references and 7 tables.) (CR)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 471 947

Relationship of Agency Structure and Client Characteristics to Rehabilitation Services and Outcomes for Consumers who are Blind

By
Brenda S. Cavenaugh

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

- ☑ This document has been reproduced as received from the person or organization originating it.
- ☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Mississippi State University
June 1999

EC 309367

BEST COPY AVAILABLE

Copyright © 1999
All Rights Reserved

Mississippi State University
Rehabilitation Research and Training Center
on Blindness and Low Vision
P.O. Box 6189
Mississippi State, MS 39762
Phone: (662) 325-2001
TDD: (662) 325-8693
Fax: (662) 325-8989

Development of this document was supported in part by the Rehabilitation Research and Training Center on Blindness and Low Vision Grant H133B10003 from the National Institute on Disability and Rehabilitation Research (NIDRR), U.S. Department of Education, Washington, DC. Opinions expressed in this document are not necessarily those of the granting agency and no endorsement by NIDRR should be inferred.

ABSTRACT

Consumers and practitioners in blindness rehabilitation support the premise that blind persons have unique vocational rehabilitation (VR) needs and are best served in identifiable agencies, established especially for that purpose. The scarcity of empirically-based data supporting this position, however, has hampered objective dialogue within the disability community regarding the continued funding of separate (blindness-only) VR agencies. This study investigated differences in VR services (expenditures, number, and duration) and outcomes (competitive sector placement and earnings) of legally blind consumers in states with separate or combined (cross-disability) agencies.

The sample included 35,396 legally blind consumers closed in the 50 states by the state VR system in 1995 and 1996. Case data from 1995 were used to identify client disability and demographic characteristics related to competitive closure and to construct two covariates to control for these characteristics in the investigation of VR services and outcomes. The first covariate, the Index of Work Disadvantage at Referral (IWDR), was constructed using a summed weighting system applied to categories of demographic variables. The weights were based on frequencies and simple correlations with outcome. The second covariate, the Demographic Predictor (DP), was the predicted score for outcome from a step-wise multiple regression with appropriately coded disability and demographic variables entered as predictors. Both covariates were derived by applying their respective procedures to the 1996 data and then used comparatively in separate covariance analyses.

A multivariate analysis of covariance (MANCOVA) using variables aggregated by state found no significant differences in the combined set of dependent variables across agency structure types after adjusting for demographic differences using either covariate. An analysis of covariance (ANCOVA) used to investigate differences in client earnings across agency structure types showed that client earnings at closures were significantly higher in separate agency states than in combined agency states, when employing the IWDR covariate but not significantly higher when using the DP covariate. A second ANCOVA used to investigate differences in competitive sector placement determined that placement rate was significantly higher in separate agency states than in combined agency states, when employing either covariate.

Although the latest available data from RSA were used in this research, there is a strong need for additional research of RSA-911 data from previous fiscal years and of new data as it is released.

TABLE OF CONTENTS

Page

CHAPTER

I. **INTRODUCTION** 1
- Statement of Problem 5
- Hypotheses 6
- Rationale for the Study 6
- Limitations 7
- Definition of Terms 8

II. **LITERATURE REVIEW** 11
- Theoretical Support for Specialized VR Agencies 11
- History of Specialized Rehabilitation Programs 13
  - The Emergence of State Commissions or Agencies 13
- History of the State-federal VR Program 14
- Research on the Efficacy of Specialized Agencies 16
  - The Mallas Study 16
  - The J. W. K. Study 17
  - Kirchner and Peterson 17
  - The NAC Study 18
  - Cavenaugh and Pierce 18
- Demographic Characteristics that Predict VR Outcome 19
- Summary of the Literature Review 21

III. **METHODOLOGY** 23
- Research Design 23
  - Advantages of Design 23
  - Restrictions of Design 24
- Participants 24
  - Available Data 24
    - Database cleaning and variable recoding 24
  - Development of Covariates 25
  - Aggregation of Variables for Hypotheses Testing 25
- Variables 25
  - VR Structure Type 25
  - Competitive Sector Placement 26
  - Earnings At Closure 26
  - Services 26
- Procedures 27
  - Development of IWDR 27

Validation of the IWDR 28
Reliability 28
Development of DP Covariate 29
Hypotheses Testing 29
Data Analysis 30

IV. RESULTS AND DISCUSSION 33
Results of Development of Covariates 33
Descriptive Statistics 33
Development of the IWDR 34
Development of DP Covariate 37
Results of Hypotheses Testing 40
Descriptive Statistics 40
Aggregation of client data 40
Hypothesis 1 42
Hypothesis 2 43
Hypothesis 3 44
Discussion 45
Utility of the Covariates 45
Differences in Services 45
Differences in Outcomes 46
Findings Across Studies 47
Limitations 48

V. SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS . . . 51
Summary 51
Theoretical Basis of Research 51
Purpose and Hypotheses 52
Literature Review 52
Methodology 53
Findings 54
Conclusions 55
Recommendations for Further Research 57

REFERENCES 59

APPENDIX

A SEPARATE AND COMBINED AGENCY STATES 69

LIST OF TABLES

TABLE		Page
4.1	Index of Work Disadvantage at Rehabilitation Referral	35
4.2	Correlations of IWDR Variables with Competitive Sector Closure for 1995	36
4.3	Point Biserial Correlations of Summed Index of Work Disadvantage Scores with Competitive Sector Placement for 1989, 1992, 1994, and 1995	37
4.4	Summary of Backward Stepwise Regression Analysis for Variables at VR Referral Predicting Placement at VR Closure for 1995	39
4.5	Table of Means and Standard Deviations for FY 1996 Aggregate Data	41
4.6	Intercorrelation Matrix State Aggregate Data 1996 (N = 50)	41
A.1	Separate and Combined Agency States (N =50)	69

CHAPTER 1

INTRODUCTION

The Rehabilitation Act of 1973, as amended, authorizes the allocation of federal funds on a formula basis to the states and territories for the administration and operation of a vocational rehabilitation (VR) program (commonly referred to as the state-federal VR program) to assist individuals with disabilities in preparing for and engaging in gainful employment. To be eligible for services from a state VR agency, an individual must have a disability that "requires vocational rehabilitation services to prepare for, secure, retain, or regain employment" (Rehabilitation Act Amendments of 1998). State VR agencies provide a wide range of services (e.g., physical restoration, counseling and guidance, vocational training, maintenance, job referral and placement) to assist people with disabilities in locating employment.

The state-federal VR program began in 1920 with passage of the Smith-Fess Act (P.L. 66-236). Early rehabilitation services were limited to vocational guidance and vocational education, along with occupational adjustment and placement services, and were restricted to persons with physical disabilities (Rubin & Roessler, 1995). During the 1920s and 1930s, blind persons were considered to have limited, if any, vocational potential and accordingly received little benefit from the initial VR legislation (Clunk, 1966). However, vocational opportunities for consumers who are blind began to expand with passage of the Randolph-Sheppard Act of 1936 (P.L. 74-732) and the Wagner-O'Day Act of 1938 (P.L. 75-739). (The Randolph-Sheppard Act enabled persons who are blind to operate vending facilities in federal buildings, while the Wagner-O'Day Act mandated the federal government to purchase products made by blind employees of sheltered workshops.)

As more blind people demonstrated their ability to be successfully employed, public perceptions slowly began to change. Consequently, federal support specifically directed toward the provision of VR services to blind consumers was included in the second major rehabilitation legislation, the Barden-LaFollette Act of 1943 (P.L. 78-113). This Act

broadened the rehabilitation program by allowing then existing state agencies, commissions, or private agencies serving blind persons to administer the state-federal VR program for individuals with blindness (Rubin & Roessler, 1995). Subsequent legislation, including the recent Rehabilitation Act Amendments which were a part of the Workforce Investment Act of 1998, have retained language allowing states to designate a state agency, or another agency, providing assistance to adults who are blind as the "sole State agency to administer the part of the plan under which vocational rehabilitation services are provided for individuals who are blind" (PL 105-220) and to designate a different state agency as the sole agency to administer the remaining VR services. This legislation has resulted in blind consumers receiving services in (a) states with two VR agencies (one specialized agency serving only persons who are blind and one general agency serving persons with other disabilities) or (b) states with a single agency operating under one "State Plan" serving persons across all disabilities.

The administrative branch of the state-federal VR program is located in the Rehabilitation Services Administration (RSA) of the Department of Education, Office of Special Education and Rehabilitative Services. RSA provides oversight to the 82 VR agencies located in the 50 states, the territories, and the District of Columbia. Within this oversight, each state is responsible for designating a state agency to administer VR services. States may also choose to designate a second state agency to administer services for individuals who are blind (Rehabilitation Act of 1973, as amended). In 25 states, a separate VR program is authorized to provide services to persons who are blind or visually impaired (Moore, Huebner, & Maxson, 1997). Because these separate agencies may restrict services to those consumers with the most severe visual impairments (e.g., legally blind or progressive visual impairment), consumers with less severe visual impairments (e.g., those who are not legally blind) are sometimes served in the VR agency coexisting with the separate agency in the same state (Cavenaugh & Pierce, 1998).

In each of the remaining 25 states, the U. S. territories, and the District of Columbia, consumers who are blind or visually impaired are served in one combined VR agency, which provides rehabilitation services to consumers with all disabilities. In some of the combined agencies, specialized blindness staff (e.g., administrators, counselors, rehabilitation teachers, orientation and mobility instructors) are located in an identifiable subunit and are responsible for the separate administration and service delivery of all services to blind clients (e.g., Oklahoma, Tennessee). In other combined agencies, little or no

specialized service delivery staff are available for the provision of services to blind clients (e.g., Georgia, Wyoming). In illustration, Lewis and Petterson (1998) found that while all separate agencies serving blind clients provided specialized rehabilitation teaching services, only 90% of combined agencies provided these services to blind clients.

Variability in the types of specialized blindness services available in the different VR agencies may be affected by individual state mandates (e.g., services to both children and adults), unique history and tradition, state financial commitments, agency order of selection (ensuring persons with the most significant disabilities are served first) and financial need policies, and availability of blindness specialized staff (e.g., orientation and mobility instructors, rehabilitation teachers, low vision specialists). Thus, differences within VR agency structure types (e.g., separate and combined) that exist across states have confounded efforts to investigate VR outcomes (JWK International Corporation, 1981; Kirchner & Peterson, 1982; Management Services Associates, 1975).

The existence of separate agencies serving blind clients has resulted in an ongoing debate within the disability community regarding the benefits from funding two VR agencies in one state--one serving blind consumers and another serving consumers with other disabilities (JWK International Corporation, 1981; Kirchner & Peterson, 1982; Management Services Associates, 1975). With the flurry of activities associated with the recent reauthorization of the Rehabilitation Act of 1973, arguments for and against continued funding of separate VR agencies serving blind consumers were, and continue to be, intensely debated and remain in the forefront of rehabilitation issues (Edwards, 1997; National Council on Disability [NCD], 1997a; NCD, 1997b). Proponents for separate VR agencies have argued that their dissolution will result in the loss of specialized blindness services critical to the rehabilitation and independent living of consumers who are blind or visually impaired (Augusto, 1997; Jernigan, 1996). At the same time, opponents have argued that administrative costs of two distinct VR agencies in one state are duplicative and possibly inequitable for persons with disabilities other than blindness (NCD, 1997a).

Although blind consumers historically have supported the dual agency model of service delivery (Gallagher, 1988; Hopkins, 1991; Joint Organizational Effort, 1994; Rusalem, 1961), other disability groups have tended to favor a cross-disability model, in which one single VR agency would serve all disability types (e.g., persons with deafness, blindness, deaf-blindness, orthopedic impairments, muscular dystrophy, multiple sclerosis, spinal cord injuries, psychological disorders, mental retardation, traumatic brain injury, cystic fibrosis, and heart conditions).

The tension between these two perspectives was most recently articulated in a March 1997 statement by the National Council on Disability (1997a). As part of its involvement in the recent Rehabilitation Act reauthorization process, NCD initially recommended that the RSA discontinue funding of separate VR agencies for clients with visual impairments. Facing major resistance from blindness-related consumer and professional groups, however, NCD later withdrew its recommendation. Instead, NCD asked that the General Accounting Office (GAO) initiate a study to investigate differences in the performance, benefits, and costs of separate and combined agencies (1997b).

While NCD's statements were congruent with its cross-disability philosophy, the Council justified its recommendations largely by pointing to the absence of conclusive empirical research to validate the claim that separate agencies are more effective. The NCD also acknowledged that its position was directly opposed to that of organizations supporting blind people and testimony of blind consumers during related public hearings.

Given the ongoing debate regarding the efficacy of separate VR agencies serving blind consumers, it is not surprising that the current number of states (25) with separate agencies is considerably less than the one-time high of 42 (Hopkins, 1991). As early as 1974, the National Council of State Agencies for the Blind (NCSAB) reacted to the decline in the number of separate agencies by commissioning the first study investigating the relationship of agency structure and program effectiveness (Management Services Associates, 1975). While results of this and subsequent studies (JWK International Corporation, 1981; Kirchner & Peterson, 1982) did not provide conclusive evidence that separate agencies were more or less effective than combined agencies in serving blind clients, JWK and Kirchner both noted that demographic characteristics of blind consumers influencing employability may differ between agency structure types. More recent studies have also reported that a higher percentage of blind consumers served in separate agencies report secondary disabilities (Cavenaugh & Pierce, 1998; National Accreditation Council, 1997), are older, have less education, receive transfer payments (e.g., Social Security disability), have more severe vision loss, and are non-White (Cavenaugh & Pierce, 1998).

While no study has investigated the efficacy of state VR agency structure types, while controlling for demographic characteristics of blind consumers, research has shown that client characteristics, singularly and in combination, rather than functional limitations associated with the medical impairment alone, are related to VR competitive employment outcomes (Wright, 1980). For example, a number of studies have found that age, ethnic background, education, and public assistance at referral

are strong predictors of competitive closure outcomes (Bellini, Neath, & Bolton, 1995; Bolton, 1979; Giesen & D'Amato, 1992; Lewis & Bolton, 1986; Moriarty, Wall, & McLauglin, 1988; Vandergoot, 1987). Findings that blind consumers of separate agencies are more likely to be socially and economically disadvantaged than blind consumers of general agencies (Cavenaugh & Pierce, 1998; JWK International Corporation, 1981; Kirchner & Peterson, 1982; NAC, 1997) would suggest that differences in demographic characteristics need to be considered and accounted for in studies comparing agency structure types.

Statement of Problem

Although research has identified client disability and demographic characteristics as predictors of employment outcomes (Bellini, Neath, & Bolton, 1995; Bolton, 1979; Giesen & D'Amato, 1992; Lewis & Bolton, 1986; Moriarty, Wall, & McLauglin, 1988; Vandergoot, 1987), no study has investigated differences on service and outcome measures across agency structure types, after adjusting for differences in client characteristics. Further, research has suggested that blind consumers in separate agencies are more socially and economically disadvantaged than blind consumers in combined agencies (Cavenaugh & Pierce, 1998; JWK International Corporation, 1981; Kirchner & Peterson, 1982; NAC, 1997). In response to these findings, this proposal is directed toward determining if differences in VR services received and outcomes achieved by legally blind persons exist between separate and combined agency states, after controlling for client demographic and disability characteristics.

Hypotheses

In order to investigate whether blind consumers differ in services received and outcomes achieved in separate and combined agency states, the following null hypotheses are proposed:

H_{o1}: There is no statistically significant difference in number of rehabilitation services, case service expenditures, and duration of services among legally blind VR consumers across state VR structure types (separate agency state, combined agency state), after controlling for client disability and demographic characteristics at referral.

H_{o2}: There is no statistically significant difference in weekly earnings at VR closure among legally blind consumers across state VR structure types (separate, combined), after controlling for client work disability and demographic characteristics at referral.

H_{o3}: There is no statistically significant difference in competitive sector placement rates among legally blind VR consumers across state VR structure types (separate, combined), after controlling for client disability and demographic characteristics at referral.

Rationale for the Study

Representatives of all major consumer groups (i.e., American Council of the Blind, Blinded Veterans Association, Canadian Council of the Blind, National Federation of the Blind) and professional organizations (Association for Education and Rehabilitation of the Blind and Visually Impaired, American Foundation for the Blind, Canadian National Institute for the Blind, National Library Service for the Blind and Physically Handicapped) in the blindness field have jointly signed a position statement indicating that it is their common experience that "specialized, comprehensive services and essential changes in social attitudes about blindness do not occur when rehabilitation services for the blind are provided through a single program which serves both blind and disabled persons" (Joint Organization Effort, 1994, p. 1). Despite this widespread belief, the paucity of supporting empirical research threatens the future existence of separate VR agencies. Organizations supporting combined agencies that serve all disability groups have called for a halt to current RSA authority permitting separate agencies for blind consumers (NCDa, 1997; Spungin, 1997).

If significant public policy changes regarding continued funding of separate agencies occur, it is imperative that those changes be based on findings of studies investigating differences in the services received and outcomes achieved realized by blind consumers served in both agency

structure types. This study contributes to the existing body of knowledge regarding consumer characteristics, services, and program outcomes of VR consumers who are blind. It examines differences in the VR services provided and outcomes attained by legally blind consumers who are served in separate agency states and combined agency states, after controlling for disability and demographic characteristics. Therefore, this study can assist policymakers in their determination of the efficacy and value of separate VR agencies serving blind consumers.

Limitations

This study utilized data collected by the state VR agencies and reported in RSA-911 national case service reports. While these reports include client referral, service, and outcome information on all cases closed by the state-federal program, it does not include client information regarding other potential predictors of employment outcomes, such as powerlessness (Moriarty et al., 1988); onset of blindness (Giesen & D'Amato, 1992), and adjustment to blindness and intelligence (Bauman & Yoder, 1966).

An obvious concern in investigating VR agency structure types relates to the lack of consistency among agencies in the type and amount of blindness-specific services provided to consumers who are legally blind. As noted in previous studies investigating relationships of VR outcomes and agency structure types (JWK International Corporation, 1981; Kirchner & Peterson, 1982; NAC, 1997), the types of specialized services available to blind clients (e.g., rehabilitation teaching, orientation and mobility, low vision, computer access technology) may vary within combined and separate agency states. While aggregate data for separate agency states and combined agency states will be provided in this study, individual states within structure type may report broad differences in services and outcomes. Therefore, readers interested in comparing a specific VR program with results of this study are urged to also review individual agency data, when possible.

As with the majority of rehabilitation research (Bolton & Parker, 1998), this study will use an ex post facto design. The design is commonly used because "many of the phenomena of interest to rehabilitation researchers are not and cannot be under the control of the researcher" (Bolton & Parker, p. 455). For example, assignment to agency types cannot be manipulated by the researcher. Because of these limitations, causal relationships cannot be detected. However, this design has proved valuable in allowing researchers to study relationships

in situations where experimental manipulation is impractical (Bolton, 1979; Borg & Gall, 1989).

Definition of Terms

Using the reporting manual for the RSA-911 case service report (RSA-PD-95-04, 1995) when appropriate, several key terms have been defined as follows:

Client income: Earnings, interest, dividends, and/or rent as reported on the RSA-911 to describe the individual's largest single source of support at application and at closure.

Combined agency states: The 25 states with a single, combined VR agency operating under a single State Plan and providing services to persons with all disabilities.

Competitive employment: Work for wages, salary, commissions, tips, or piece-rates, not including work in extended employment.

Competitive sector placement: Includes Competitive employment, state managed Business Enterprise Program (BEP), or Self-Employed placements.

Computer Access Specialist: Specialized professional who provides training in computer access equipment (e.g., braille, large print, and speech computer systems for people who blind or visually impaired).

Cross-disability organizations: Organizations serving a variety of disability types.

Extended employment: Work for wages or salary in a setting conducted by a nonprofit organization for persons with disabilities unable to enter into or not ready for competitive employment (referred to as "sheltered workshop" placements in earlier RSA Case Service Reports).

Homemaker: Men and women whose principal activity is keeping house for their families or themselves, if they live alone.

Legally blind: Blindness in both eyes, with a correction of not more than 20/200 in the better eye or a limitation in field within 20 degrees (RSA major disability codes 100-119).

Non-competitive sector placements: VR consumers closed status 26 (successful) in homemaker, unpaid family workers, and extended employment statuses and all unsuccessful cases (statuses 08, 28, and 30).

Orientation and mobility instructor: Specialized professional who provides blind or visually impaired people with training in orientation and mobility skills and in use of adaptive equipment that enable them to develop or enhance their ability to travel independently.

Rehabilitation teacher: Specialized professional who provides blind or visually impaired people with training in a variety of areas, including communication (e.g., braille, writing) activities of daily living (e.g., cooking, cleaning, sewing, dressing), and low vision.

RSA-911 case service report: Client referral, service, and outcome data reported annually to RSA on all cases closed during each federal fiscal year.

Self-employed: Work for profit or fees in one's own business, farm, shop, or office, excluding BEP.

Separate agency states: The 25 states with two VR agencies--one responsible for serving consumers with primary disabilities of blindness and another responsible for serving consumers with other disabilities.

Specialized services: Services (orientation and mobility, rehabilitation teaching, low vision, computer access technology) provided by qualified professionals in meeting the unique needs of persons who are blind or visually impaired.

State-agency-managed business enterprise (BEP): Vending facilities and other small businesses managed by persons with severe visual impairments and under the supervision of the state VR agency.

Status 08 closures: Clients not accepted for VR services from referral status (status 00), applicant status (status 02), or from extended evaluation services (status 06).

Status 26 closures: Clients accepted for services and closed "rehabilitated" (competitive employment, extended employment, self-employed, BEP, homemaker, and unpaid family worker).

Status 28 closures: Clients accepted for services and closed "not rehabilitated" after Individualized Plan for Employment (IPE) is initiated.

Status 30 closures: Clients accepted for services and closed "not rehabilitated" before (IPE) initiated.

Transfer payments: Types of public support received during the VR process, including Social Security Disability Insurance (SSDI); Supplemental Security Income (SSI-aged, SSI-blind, SSI-disabled); Aid to Families with Dependent Children (AFDC); General Assistance; and Veterans disability.

Unpaid family worker: Work status in which client performs unpaid family work that cannot be classified according to any of the Dictionary of Occupation Titles occupations.

Weekly earnings at closure: Includes total wages, salaries, tips, commissions, and profits from self-employment earned as regular income before payroll deduction in the week before VR closure.

CHAPTER II

LITERATURE REVIEW

This chapter includes a review of topics related to questions addressed in this study. These topics include (a) theory supporting specialized services and separate VR agencies for consumers who are blind, (b) the history of specialized rehabilitation programs serving only blind consumers, (c) history of the state-federal VR program, (d) results of studies investigating the effects of agency structure types on VR outcomes achieved by consumers who are blind, and (e) findings identifying client demographic characteristics as a significant set of factors in predicting VR outcome.

Theoretical Support for Specialized VR Agencies

Leaders in the field of blindness have not always shared a unified philosophy of blindness. Jernigan (1986) has described blindness as an individual characteristic, no more or less special or terrible than the hundreds of other individual characteristics. He has further contended that blindness can be reduced to a "mere physical nuisance" (p. 371), with specialized training and opportunity. In response, Gallagher (1988) has described blindness as a "serious psychological, physiological, and cognitive blow which, left untended, impedes and can even destroy any chance for a normal and productive life" (p. 227). Edwards (1998) has also agreed that blindness is much more than a nuisance and that "blind people should expect society to make changes that facilitate the inclusion of people who are blind" (p. 2).

While consumers and practitioners in the blindness field have not always shared identical philosophies of blindness, they have embraced a theoretical perspective which accepts the premise that blind persons have unique rehabilitation training needs that are unlike those of persons with other disabilities. In general, they have also agreed that the unique needs of blind persons must be addressed by specialized professionals in separate blindness agencies. Further, a list of a priori assumptions supporting this theoretical perspective has been adopted by

all major consumer and professional agencies of and for the blind in the United States and Canada. Introduced in the Joint Organizational Effort (JOE) document (1994), these assumptions are listed below:

> Specialized, comprehensive rehabilitation services and essential changes in social attitudes about blindness do not occur when rehabilitation services for the blind are provided through a single program which serves both blind and disabled persons. This is because the characteristics and distinctive needs of the blind become lost amid much larger issues and populations and because specialized services are overshadowed by diverse, unrelated goals.
>
> Promoting more enlightened social attitudes about blindness is an indispensable goal of specialized services for the blind. To achieve this unique goal competent personnel, including blind persons serving as role models in both staff and volunteer capacities, must be assigned to teach blindness-related alternative techniques. Blind individuals require comprehensive and often complex rehabilitation services in areas such as adjustment training, independent mobility, Braille, and the use of assistive technology to meet their particular information needs resulting from vision loss.
>
> Laws pertaining to "people with disabilities" as a class may appropriately be general if the purpose is to prohibit discrimination or to identify individual rights. However, rehabilitation programs and the laws which authorize them have a far more precise mission. When services for the blind are submerged into broad disability programs, precision is sacrificed for generality, and comprehensive, consumer-responsive services for blind individuals are lost. (pp. 1-2)

The National Council of State Agencies for the Blind (NCSAB) (1994) also embraced a similar theoretical perspective with the adoption of the following statement:

> The skills of blindness are markedly different from the skills required by other disabled persons. The methodology of instructing the blind and confronting the issues of blindness in our society requires the development of specialized service programs, with service delivery by specialized personnel. Therefore, the National Council of State Agencies for the Blind (NCSAB) supports the concept of a separate service delivery system and organizational structure for the blind to maximize the success of blind persons served by rehabilitation agencies. (p. 1)

In recent testimony delivered to the NCD, Edwards (1997) reconfirmed the united position of consumer and professional groups,

when he reported that "Every organization of and for blind people believes in the efficacy of separate state agencies for the blind" (p. 1).

The two major forms of explanation of social phenomena used in social science research are formal axiomatic theory and functionalism (Bailey, 1994).

> Functionalism explains the existence of a phenomenon by discovering what function it has for the larger system of which it is a part. The basic tenet of functionalism is that phenomena exist in the system only because, and only as long as, they are needed and perform a useful function. (Bailey, 1994, p. 501)

Given that separate agencies were legislated into existence in response to the failure of existing VR agencies to respond to the VR needs of persons who are blind, functional theory may be used to explain this emergence of blindness-only agencies. Further, functionalism would posit that the continued existence of these agencies will be dependent upon their continuing to serve a useful function in society.

History of Specialized Rehabilitation Programs

The country's first employment program for adults with blindness or severe visual impairment was established in 1840 on the campus of Perkins Institution and Massachusetts Asylum for the Blind (later renamed Perkins School for the Blind) (Obermann, 1965). Given the virtual nonexistence of employment opportunities available to blind persons, the program was developed to assist the school's graduates in locating work. The Perkins' program quickly achieved success in placing their graduates, and consequently, was opened to all blind persons in the New England area. The number of blind persons seeking employment quickly exceeded available jobs. In response to the need for expanded placement options, Perkins established the nation's first workshop in 1850 for the purpose of providing sheltered employment to blind workers (Obermann, 1965). Residential schools and private rehabilitation organizations serving blind persons in other states also began to establish sheltered workshops, but nationally, these programs were few in number and, for the most part, restricted vocational training to a few areas, such as piano tuning and broom and mop making (Magers, 1969).

The Emergence of State Commissions or Agencies

Despite the beginnings of a national network of service delivery, employment opportunities for most blind Americans continued to be isolated or nonexistent during the latter part of the 19th century (Magers,

1969). Moreover, employment opportunities remained stagnant until the creation of a number of state agencies serving blind adults resulted in an increase of blindness services throughout the nation. The first of these state agencies was located in Connecticut (Magers, 1969). Established by the state legislature in 1893, the Connecticut Agency for the Blind was responsible for providing teaching in the homes of adults who were blind.

After the turn of the century, other specialized commissions or agencies serving only consumers with blindness or visual impairment appeared in several states (Obermann, 1965). These commissions were established to administer blindness-related social, economic, and medical state programs and to create or expand employment opportunities for blind persons. The Massachusetts Commission for the Blind was established in1906 and was successful in placing a blind client in private industry that same year. Early commissions were also established in New Jersey and Ohio in 1908 (Magers, 1969). Before 1925, most of the industrial placements were made by separate commissions and private agencies in Chicago, Cleveland, Milwaukee, Minneapolis, Detroit, and Boston (Clunk, 1966). With the establishment and growth of these public and private agencies, the blindness service delivery system, as we know it today, began to emerge (Magers, 1978).

History of the State-federal VR Program

On June 2, 1920, President Woodrow Wilson signed the Smith-Fess Act (P.L. 66-236), the nation's first civilian vocational rehabilitation legislation. The Act provided federal funding to states on a 50-50 matching basis for the provision of vocational guidance, education, adjustment, and placement services to individuals with physical disabilities (Rives, 1966). The Federal Board of Vocational Education was given the responsibility for administering the new program. It is interesting to note that because the Board had long regarded home economics as a legitimate training area, homemaker placements were considered valid occupations under the VR legislation (Rubin & Roessler, 1995).

During the next two decades, the state VR programs provided few, if any, services to consumers who were blind (Clunk, 1966; Koestler, 1976; Rives, 1966; Rubin & Roessler, 1995). For example, during 1936 "the general rehabilitation agencies for the sighted of the country reported two blind persons as being rehabilitated" (Clunk, p. 145). Blind applicants were routinely determined not vocationally feasible by the state VR agencies and were referred to the specialized state commissions

and agencies serving blind persons. These commissions and agencies operated with limited budgets and received no federal funding. Consequently, consumers who were blind continued to receive minimal vocational services (Magers, 1969).

Although providing no direct federal funding, the passage of the Randolph-Sheppard Vending Stand Act of 1936 (P.L. 74-732) appreciably expanded the employment opportunities of blind adults. The Act permitted the establishment of vending facilities in federal buildings to be operated by blind persons and empowered the Commissioner of Education to designate "The State Commission for the Blind in each State, or in any State in which there is no such commission, some other public agency to issue licenses to blind persons" (Randolph, 1965). Clunk (1966) credited the successful placements of the Randolph-Sheppard program with opening the doors to the promotion and employment of blind persons not only in the United States but throughout the world.

Employment opportunities for blind persons continued to expand with the passage in 1938 of the Wagner-O'Day Act (P.L. 75-739). This Act provided for government purchase of products made by sheltered workshops and led to creation of the National Industries for the Blind to coordinate government purchases between the workshops and federal agencies. The Wagner-O'Day Act began to stabilize and substantially expand sheltered work opportunities at a time when depressed economic conditions throughout the United States had previously resulted in a loss of employment for many blind workers (Clunk, 1966).

The return of veterans disabled during World War II gave rise to the next major civilian rehabilitation legislation, the Barden-LaFollette Act of 1943 (P.L. 79-113) (Rives, 1966). Signed by President Franklin Roosevelt, the Barden-LaFollette Act provided the first federal support for the VR of blind consumers and made available physical restoration services to consumers with physical disabilities. Koestler (1976) describes the pronounced impact of the Act on the stabilization and growth of specialized blindness agencies and services in the following statement.

> Because little of this progress would have taken place without the specialized skills of the organizations working with and for blind people, one of the most important contributions of the Barden-LaFollette Act was the way it legislated these organizations into partnership with the federal government. The Act specifically provided that any state with a legally constituted commission or agency for the blind could assign to it the administration of the federal-state vocational rehabilitation program for visually disabled

> persons. For the first time, state agencies for the blind, some of which had been in existence for more than thirty years, were no longer solely dependent on the capricious ups and downs of annual legislative appropriations. For the first time, they had sufficiently firm financial backing to plan, staff, and organize their work on a systematic, comprehensive basis. It was no wonder that some called the Barden-LaFollette Act "the Magna Charta of the blind." (p. 232)

The latest amendments to the Rehabilitation Act of 1973 were incorporated into the Workforce Investment Partnership Act (PL 105-220) and signed into law by President Clinton in August 1998. The 1998 Amendments continue to include a provision allowing states to designate a separate agency "as the sole state agency to administer the part of the plan under which vocational rehabilitation services are provided for individuals who are blind" (H. R. 1385, Workforce Investment Act of 1998). As with earlier rehabilitation legislation, the overall purpose of the Amendments is to empower individuals with disabilities to maximize their employment and independent living opportunities.

Research on the Efficacy of Specialized Agencies

In the years since the passage of the Barden-LaFollette Act, the number of separate VR agencies serving blind consumers has slowly fallen from a one-time high of 42 agencies (Hopkins, 1991). In response to this downward trend, several major studies investigating differences in outcomes of separate (blind) and combined agencies have been undertaken. Summaries of the studies are presented below.

The Mallas Study

In a report to the National Council of State Agencies for the Blind (NCSAB), Management Services Associates (1975) identified four organizational structure types and concluded that "the strongest, most effective and most dynamic (in respect to impact of services on clients and the breadth of spectrum of services offered to clients) systems are those in separate agency status" (p. 22). In the same report, organizational structure was reported to be less important than the presence of strong agency leadership having direct access to the governor and legislature. Referred to as the Mallas study, this investigation was the first major attempt of the blindness field to respond to the growing trend in state government to create large umbrella-type human services organizations for the provision of generic social and rehabilitative

services (Hopkins, 1991). Unfortunately, the absence of sufficient documentation of research methodology and supporting data has caused many to question the validity of Mallas's findings (viz., JWK International Corporation, 1981; Kirchner, 1982).

The J. W. K. Study

In a 1981 study funded by the RSA and conducted by JWK International Corporation, the effects of administrative structure on service delivery to rehabilitation clients reporting blindness or visual impairment were again examined. Using a decision tree process, VR agencies were initially categorized into six administrative types which were later collapsed into three types. Classification was based on answers provided by agency administrative staff to questions on organizational structure. Of the three types, administrative type "C" was the most homogeneous group and the smallest with 14 agencies. Of the 14 type "C" agencies, 13 operated under a separate state plan for services to blind or visually impaired consumers. Administrative type "B" was the largest group with 21 agencies. Although almost half of the type "B" agencies had a separate state VR plan, the majority of the VR directors in this group did not have the authority to initiate formal contacts with the governor or state legislature. Administrative type "A" included 18 agencies and was the least homogeneous group. Only three of these agencies operated under a separate state VR plan. Additionally, most of the type "A" agencies did not have a separate legislative appropriation for VR services to blind consumers nor did the majority of VR directors in this group have authority to initiate formal contact with the governor or state legislature.

Comparisons were made among the three structure types on selected rehabilitation process and outcome variables. From this study, JWK International Corporation concluded that (a) blind consumers are served better by counselors with specialized caseloads; (b) type of administrative structure has only a slight relationship to outcome; (c) there is a relationship between length of time in services and cost of services; and (d) there is no evidence to indicate that one administrative structure type is more cost-effective than another administrative structure type.

Kirchner and Peterson

In another study, Kirchner & Peterson (1982) utilized the official RSA designation of state agencies as their basis for categorizing agencies.

(RSA classifies each state agency either as a "General" or "Blind" agency.) Comparisons of the two agency types were based on analysis of RSA data for all rehabilitation cases closed in fiscal year (FY) 1971. Although not the most current, the 1971 database was chosen because of the availability of additional outcome data from a study done by the Social Security Administration. That outcome data included information on employment earnings of clients 1 year following VR closure.

As with the JWK International Corporation study, Kirchner and Peterson's results were mixed with small or no differences found on selected outcome variables between the two agency types. Additionally, the analysis of consumer employment and earnings 1 year after closure showed no difference in client earnings between agency types. Interestingly, the researchers found that visually impaired clients of "Blind" agencies tended to be members of demographic groups that are generally considered to be more socially disadvantaged. For example, "Blind" agencies served more older women and more African American consumers than did "General" agencies.

The NAC Study

More recently, the National Accreditation Council for Agencies Serving the Blind and Visually Handicapped (NAC) (1997) published its report comparing rehabilitation outcomes for consumers served in different agency structure types. As in the Kirchner and Peterson study, the RSA "Blind" (separate) or "General" (combined) designation was used in categorizing agencies. In developing the NAC report, the authors examined selected descriptive data from the 1994 RSA-911 database. Their findings indicated that "Blind" agencies reported a higher rate of competitive closures, a lower rate of homemaker closures, and higher average weekly earnings for closures than reported by "General" agencies. Although the amount of time spent in the VR program was essentially the same for both agency types, the average cost of services was found to be $600 more for clients closed from "Blind" agencies.

Cavenaugh and Pierce

Using RSA-911 data from fiscal year 1989, Cavenaugh and Pierce (1998) investigated the consumer characteristics, services, and outcomes of consumers who are blind or visually impaired served in separate and general agencies. To facilitate comparisons of results with other studies, state VR programs were classified according to their RSA designation as either a "Blind" (separate) or "General" agency. Cavenaugh and Pierce

found that, compared to "General" agencies, "Blind" agencies serve consumers who are more socially and economically disadvantaged, serve consumers with more severe visual impairments and more secondary disabilities, and incur greater service costs. The researchers also reported that legally blind consumers served in "Blind" agencies were more likely to be self-supporting at closure; more likely to be closed in competitive, self-employed, or BEP work statuses; and less likely closed in a homemaker status than legally blind consumers served in "General" agencies.

Demographic Characteristics that Predict VR Outcome

Seelman (1998) recently challenged members of the National Council on Rehabilitation Education (NCRE) to integrate the "New Paradigm of Disability" into their research and practice. At NCRE's 1998 conference, the Director of the National Institute on Disability and Rehabilitation Research noted that the "new paradigm" emphasizes environmental and socioeconomic barriers, as apposed to medical impairment and related functional limitations emphasized under the "old paradigm." Findings from previous outcome research have supported Seelman's call for a shift to the "new paradigm." For example, in one of the first large-scale investigations of the VR process, Eber (1966) found that client outcomes could be predicted from social demographic information. In a later study, Wright (1980) reported that a combination of socioeconomic factors, rather than medical factors alone, results in a substantial impediment to employment. Moriarty, Walls, and McLaughlin (1988) concluded that social disadvantage, not functional limitations from impairment, is the primary determinant of VR outcome.

A number of prediction studies have examined the relationship of demographic and disability characteristics on VR outcomes of blind or visually impaired consumers. Using FY1971 RSA data of closed VR clients, Kirchner and Peterson (1982) reported that clients who were placed in competitive employment, versus those placed as homemakers, (a) were less severely visually impaired, (b) had no secondary disabling condition, (c) were slightly more likely to be male, (d) were under 34 years old, (e) were either never married or currently married, (f) had a twelfth-grade education, (g) were white, (h) received neither SSI nor SSDI, and (i) were competitively employed at application.

In another study, Giesen and McBroom (1986) used discriminant analysis to predict membership in homemaker versus competitive closure status. A number of discriminating variables were identified, including (a) gender, (b) primary source of support at referral, (c) receipt

of SSI or SSDI, (d) presence of severe secondary disability, (e) age at referral, (f) marital status, (g) age at onset of blindness, and (h) referral source. Analyses were based on the National Blind and Low Vision (NBLV) database collected from case files of 619 legally blind VR clients closed in status 26 (successful) and in status 28 (unsuccessful) from 1978 to 1980.

In a similar study, Giesen, Graves, Schmitt, Lamb, Cook, Capps, and Boyet (1985) identified a number of variables that were found to discriminate competitive closures from unsuccessful closures (status 28). Competitive closures reported (a) an absence of secondary disability, (b) earlier onset of blindness, (c) not receiving SSI or SSDI and (d) fewer additional disabilities. Similar results were also reported by Giesen and Graves (1987) and Giesen and D'Amato (1992).

Using 1982 RSA data, Hill (1989) investigated the effects of socioeconomic and VR program variables on the probability that a client would be closed in competitive employment, self-employment, sheltered employment, or homemaker work status. Using maximum likelihood logit estimation, Hill found that sex, age, race, marital status, and severity of visual impairment significantly influence the type of employment outcomes achieved by clients who are blind or visually impaired.

More recently, Bellini, Neath, & Bolton (1995a) developed a scale of social disadvantage based on client demographic and disability factors reported at VR referral that were related to competitive employment. The sample for this study included VR clients closed from the Arkansas VR agency serving all disability groups. Because Arkansas is a separate agency state, the sample did not include blind or visually impaired clients served in the separate VR agency. Using RSA-911 data for FY 1991, 1992, and 1993, client factors consistently associated with competitive outcome were weighted according to strength of relationship and included in the Scale of Social Disadvantage (SSD) for Vocational Rehabilitation. Selected variables included education at referral; age at referral; marital status at referral; primary disability; secondary disability; receipt of SSI, SSDI, or AFDC; family income at referral; and employment status at referral. A summed SSD score, based on scores of individual scale variables, was computed for each client case.

The researchers then compared the correlations of SSD case scores with the multiple correlations of the optimally weighted linear composite of the same predictors on validation samples from FY 1991, 1992, and 1993 RSA-911 case reports. Their results showed little difference in predictive utility, whether using the SSD or multiple regression approach. The researchers concluded that the SSD provided VR

counselors and administrators with an easily computed composite score of those client disability and demographic characteristics known at the time of application that were associated with rehabilitation outcome. Thus, the SSD could be used to identify those clients likely to need intensive services in finding employment (Bellini, Neath, & Bolton, 1995b).

Unfortunately for purposes of this study, the SSD was developed using client data from a general VR agency which did not serve blind clients. Further, the SSD included an item on sensory disabilities which is weighted to indicate greater probability for competitive employment and would not be valid for use with blind clients.

Summary of the Literature Review

Rehabilitation consumers and practitioners in the blindness rehabilitation field accept the premise that continued existence of separate VR agencies is critical to ensuring quality services and outcomes for blind consumers. Further, they believe that availability of the specialized blindness services provided by qualified staff would not long survive in a generic service delivery environment (Edwards, 1997; Jernigan, 1996; JOE, 1994; NCSAB, 1994). Although proponents of cross-disability programs have called for the end of federal VR funding of state agencies serving only those consumers who are blind or visually impaired (NCDb, 1997), there have been few empirical studies investigating the effects of agency structure on rehabilitation services and outcomes.

This review found that (a) the heterogeneity within agency structure types has complicated the process of making valid comparisons of rehabilitation programs (Cavenaugh & Pierce, 1998; JWK International Corporation, 1981; Kirchner & Peterson, 1982), (b) the mixed findings of studies have not provided conclusive evidence that separate agencies are more effective nor have they provided evidence that combined agencies are less, equally, or more effective, (c) disability and demographic characteristics of consumers are related to VR outcome and may differ in separate and combined agency states, and (d) no study has investigated agency structure differences while controlling for client demographic predictors of outcome. In response to these findings, the present study investigated differences in services received and outcomes achieved by legally blind clients in separate and combined agency states, after controlling for client disability and demographic referral characteristics.

CHAPTER III

METHODOLOGY

Research Design

A causal-comparative (sometimes called ex post facto) and correlational research design were used in this study. Both designs are similar in that the independent variables are not manipulated by the researcher, but only measured (Bolton, 1979). A correlational design was used to identify client demographic and disability variables, known at time of VR referral, that discriminate between competitive and non-competitive sector placement. Variables strongly associated with work outcome were included in the development of the Index of Work Disadvantage at Referral (IWDR). A composite IWDR score was generated for each VR case and used as a covariate in investigations of the hypotheses. In addition, multiple regression analysis was used to assess the relationship between client disability and demographic characteristics and competitive sector placement. From this analysis, demographic predicted (DP) values for each VR case were added to the data set for use as a second demographic covariate. The causal-comparative method was used to investigate differences in VR services, weekly earnings at closure, and competitive sector outcomes for legally blind consumers closed in separate and combined agency states, using IWDR scores as the covariate. The investigation was then repeated using DP scores from the regression analysis, rather than IWDR scores, as the covariate.

Advantages of Design

Because VR researchers cannot control many of the variables of interest in their research, most of their research designs are ex post facto designs (Bolton & Parker, 1998). For example, in a study of the effects of severity of vision on rehabilitation outcomes, the degree of vision loss cannot be manipulated. Therefore, the effect of the independent variable, severity of vision, is studied after its effect on rehabilitation outcome has already occurred. Because the current study investigates similar

variables (e.g., sex, race, marital status, receipt of transfer payments, agency structure type), which do not permit experimental manipulation, a causal comparative design is employed.

Restrictions of Design

In an ex post facto study, causal relationships cannot be established from collected data. This is because the researcher is unable to manipulate an independent variable, assign participants randomly to conditions, and control the many extraneous variables affecting the dependent variable (Borg & Gall 1989). Because failure to control extraneous variables can lead to restrictions in drawing firm conclusions regarding statistical tests, the nature of much rehabilitation phenomena is such that ex post facto studies have played an important role in research dealing with the state-federal VR program. (Bolton & Parker, 1998).

Participants

Available Data

Client data from annual RSA-911 case service reports for FY 1989 (N = 16,321), 1992 (N = 16,400), 1994 (N = 17,498), 1995 (N = 16,569), and 1996 (N = 18,827) were used in the current study. Each RSA-911 report included client referral information (e.g., age, sex, race, education, primary disability, secondary disability, employment status, source of support) services information (e.g., types of services received, such as physical restoration, training, transportation, job referral, job placement, cost of services), and outcome information (e.g., type of closure, earnings at closure) for all cases closed during the fiscal year.

Database cleaning and variable recoding. The documentation in the reporting manual for the RSA case service report was used to define the beginning and ending columns for each variable in an SPSS 8.0.1 for Windows 95/NT command syntax file. The data were read as a fixed width ASCII text file. Most variables were defined as numeric variables and the remaining variables were defined as string variables to accommodate alphabetic character entries. Descriptive variable labels were assigned to each variable with SPSS commands, and labels for each possible value of a variable were assigned, where appropriate. The data were inspected for missing values, invalid codes, and inconsistencies between selected variables. User-defined missing values were used to prevent invalid codes from being confused with valid data and to allow them to be treated separately from cases where data were explicitly coded

as having been "not reported." Some variables not explicitly stored in the database were computed from existing variables (e.g., age at application was computed from date of birth and date of application).

Development of Covariates

The sample for the development of the IWDR and DP covariates included all VR clients (excluding the District of Columbia and the territories) reporting a primary disability of legal blindness (RSA codes 100-119) who were closed from the state-federal program in FY 1995 (N = 16,569). The IWDR was then validated on all legally blind clients closed in FY 1989 (N = 16,321), 1992 (N = 16,400), 1994 (N = 17,498), and 1996 (N = 18,827). Data used for development and validation of the covariates were purposely chosen to include the most recent RSA-911 data and to include cases served before and after implementation of the Rehabilitation Act Amendments of 1992.

Aggregation of Variables for Hypotheses Testing

The unit of analysis for investigating differences in VR services and outcomes was the 50 separate and combined agency states administering the state-federal VR program. State aggregate data were based on all of the 18,827 legally blind VR clients (excluding clients from the District of Columbia and the territories) closed in FY 1996, the most recently available national data.

Variables

VR Structure Type

Using RSA information for FY 1996, the 50 states were categorized as either a separate agency state or a combined agency state. In the 25 separate agency states, two VR agencies--one providing specialized blindness services and one providing cross-disability services--had been designated by RSA to administer the state-federal VR program. In the 25 combined agency states, a single agency providing cross-disability services had been designated by RSA as the sole state agency to administer the state-federal program under a single "State Plan."

Rehabilitation clients reporting legal blindness as their major disabling condition (RSA codes 100-119) were categorized as either having received services in a separate agency state or in a combined agency state (See Appendix A for a listing of separate and combined agency states). It is important to note that during FY 1996, 72 legally

blind consumers in separate agency states were closed by the general VR agency providing cross-disability services in that same state. Although this small number of clients were not served in the separate agency, they received VR services in a separate agency state and were included with the separate agency data analyses.

Competitive Sector Placement

Status 26 (rehabilitated) closures are classified into one of six work statuses. These statuses are competitive employment, extended employment (in previous RSA case service reports referred to as sheltered workshop), self-employment (except BEP), state-agency-managed business enterprise program (BEP), homemaker, and unpaid family worker. For purposes of this study, clients closed into competitive employment, self-employment, and BEP work statuses were considered competitive sector placements. All other clients were considered non-competitive closures. This latter group included the remaining status 26 closures (i.e., homemakers, extended employment, and unpaid family workers) and status 08, 28, and 30 (not rehabilitated) closures. Aggregation produced an mean competitive sector placement score for each state, which also was the proportion of competitive sector closures for each state.

Earnings At Closure

Earnings are defined in the RSA-911 case service report as the amount of money earned by clients in the week prior to VR closure. Wages, salaries, tips, commissions, and self-employment profits received as regular income before payroll deductions are included in this amount. Aggregation produced a mean weekly earnings score for each state.

Services

Service variables included (a) number of services received, (b) duration of services, and (c) case service expenditures. Number of services was computed by summing all the different services provided for each case. Duration of services was computed using the date of VR application and the date of VR closure. Case service expenditures was the total amount of case service dollars expended by the VR agency during the "life of the case." This amount did not include program administration or salary costs. These three service factors were chosen in response to several studies reporting their relationship with more

successful rehabilitation outcomes (Bellini, Bolton, & Neath, 1998: Cook & Bolton, 1992; Eleventh Institute on Rehabilitation Issues, 1973; Kunce, Miller, & Cope, 1974; Szymanski & Danek, 1992). Aggregation produced a state average for each of the above service variables.

Procedures

Development of IWDR

Several studies have reported that blind or visually impaired clients served in separate agencies report more severe vision loss, more secondary disabilities, and are more socially, educationally, and economically disadvantaged than those served in combined agencies (Cavenaugh & Pierce, 1998; JWK International, 1981; Kirchner & Peterson, 1982). At the same time, a number of studies have reported that blind or visually impaired VR clients with social, education, and economic disadvantages are less likely to achieve competitive employment (Giesen and D'Amato, 1992; Giesen & McBroom, 1986; Hill, 1989).

Given these findings, the purpose of the IWDR was to gather client demographic and disability information into a construct of "work disadvantage." This construct was based on client data known at VR referral that were found to be significantly related to competitive sector placement at closure. The IWDR was intended to be used as a covariate to adjust for preexisting client differences on disability and demographic predictors of employment in investigations of differences in services and outcomes across agency structure types. Secondly, the IWDR was designed to be easily understood and computed by VR administrators and counselors, who might be less comfortable with more complicated multiple regression techniques for identifying clients at risk for non-competitive work outcomes.

Using RSA-911 FY 1995 data, 10 variables known at time of VR referral, and identified from the review of literature as being associated with employment outcome, were initially chosen for possible inclusion in the IWDR. To determine the strength of the association between each of these 10 variables and the dependent measure (competitive sector placement), correlation coefficients were obtained. In addition, the proportion of legally blind clients who were competitive sector closures was computed for each variable.

In developing a user-friendly index that could be easily applied to the VR counseling setting, variables were arranged into simplified coding categories. In general, this means that continuous measurement-level variables were transformed into simplified, ordered ranges. For example,

age at application was subdivided into four age ranges for easy classification of participants. Likewise, primary source of support at application, with 10 original categories, was reduced into four categories. Redundant information (e.g., data on client earnings at referral was included in 2 of the original 10 variables) and variables that did not discriminate between competitive and non-competitive employment (i.e., the correlation of race with outcome was .029) were eliminated from the IWDR.

Variables retained in the IWDR were then assigned weights to reflect the magnitude of their relationship with competitive sector placement at closure. Variables found to be strongly correlated (i.e., $r \geq .30$) with competitive sector outcome were assigned a maximum total weight of "3" and variables that were less strongly correlated (i.e., $r > .15$ and $< .30$) with competitive sector outcome were assigned a maximum total weight of "2". Categories within each variable were then weighted, according to the strength of their association with outcome. Each category found to be less strongly related with non-competitive outcomes was coded a low number ("0" or "1") while each category more strongly related to non-competitive placement was coded a high number ("2" or "3"). At completion of weighting, a total IWDR score was computed for each of the legally blind cases closed in FY 1995. Correlations of the total Index scores with the dependent variables (i.e., competitive or non-competitive employment, earnings at closure) were then computed. Finally, IWDR scores for all legally blind clients closed in FY 1996 were computed and then aggregated to produce an average covariate score for each state.

Validation of the IWDR. Significant effort was made to ensure the validity of the IWDR. First, only those demographic and disability variables consistently identified in the literature review as predictors of rehabilitation outcome were selected for possible inclusion in the index. Correlations were run between each variable and the criterion (competitive sector placement) in assignment of appropriate weights to Index items. To assess the IWDR's predictive validity in discriminating between competitive and non-competitive closure statuses in years other than 1995, the IWDR was cross-validated on FY 1989, 1992, and 1994 RSA-911 data.

Reliability. The reliability of an instrument has been defined as the degree of consistency with which it measures whatever it is measuring (Ary, Jacobs, Razavieh, 1990). A summed IWDR score for each case was computed from RSA-911 client demographic variables (i.e., sex, age, secondary disability, source of financial support, marital status, and educational level) recorded by the VR counselor at the time of

client referral. These variables have distinct, easily-understood meanings for rehabilitation counselors and consumers. Although there is always potential for clerical errors and manipulation of data for ideological or other agency purposes, there is no reason to expect that these data would not be accurately and consistently reported. Given that an objective assessment of the client record, rather than a subjective measurement of the client, was used in computing IWDR scores, reliability becomes less of an issue.

Development of DP Covariate

An additional demographic score was obtained to further assess the validity of the IWDR as a covariate in the investigation of services (duration, expenditures, number) and competitive sector placements across separate and combined agency states. The sample used in the development of the DP covariate included 16,887 legally blind VR clients closed from the 50 states during FY 1995. Multiple regression analysis was used to estimate the relationship between the independent variables (source of support at referral, age at referral, marital status at referral, secondary disability, gender, and educational level) and the dependent dichotomous variable (competitive sector placement at closure). Dummy variables were developed to incorporate categorical (non-metric) data (i.e., source of support, marital status, education) into the analysis. This increased the number of independent variables to 18. Backward stepwise regression was employed to determine which of the independent variables were included in the final regression. In backward stepwise regression, the equation starts with all variables and then deletes variables one at a time. The multiple regression equation developed on the FY 1995 RSA-911 data was applied to the FY 1996 data, and the unstandardized predicted value for each case was saved to the working datafile. These values were then aggregated to provide an average demographic covariate score for each state.

Hypotheses Testing

All legally blind consumers closed from the VR program for FY 1996 (excluding the District of Columbia and the territories) were selected for analysis. At the time of this study, the FY 1996 RSA-911 report was the latest available and was chosen for its recency.

The IWDR covariate and the DP covariate were each used in separate analyses to statistically adjust for any differences in client disability and demographic characteristics at referral, in determining if

client services, earnings at closure, and competitive sector placement differed in separate and combined agency states. In other words, the set of hypotheses was first examined using only IWDR scores as the covariate and examined again using only the DP covariate. The analyses were repeated using the DP covariate to further assess the validity of the IWDR.

Data Analysis

The statistical package for the social sciences (SPSS) version 8.0.1 for Windows 95/NT was used to perform the statistical analyses. In testing the first hypothesis, a two-group multivariate analysis of covariance (MANCOVA) was performed on three dependent variables associated with VR services: number of services received, duration of services, and cost of services. The disability and demographic covariate, as measured by the IWDR, was included in the design model. The independent variable was VR agency structure type (separate, combined). This investigation was then repeated using the disability and demographic covariate, as measured by the DP covariate.

In testing the second hypothesis, a two group analysis of covariance (ANCOVA) was performed on one dependent variable: client earnings at closure. The design model included the client disability and demographic covariate, as measured by the IWDR. The independent variable was VR structure type (separate, combined). This investigation was also repeated using the DP covariate.

In testing the third hypothesis, a two group analysis of covariance (ANCOVA) was performed on one dependent variable: competitive sector placement. The design model included the client disability and demographic covariate, as measured by the IWDR. The independent variable was VR structure type (separate, combined). Again, this investigation was repeated using the DP covariate. While neither ANCOVA or MANCOVA totally control for initial differences in groups, they are frequently recommended for improving the precision of the causal-comparative design (Ary, Jacobs, Razavieh, 1990; Stevens, 1990).

To interpret statistical significance, alpha was set at .10. This level of significance is appropriate in studies with high Type II error rates (not finding a difference when it is present). The present study has low statistical power to detect differences (high Type II error) because of the combination of small sample size (total sample size is necessarily limited to the 50 states) and small population effect size (see JWK International, 1981; Kirchner & Peterson, 1982), typical of much research in the social sciences (Hunter, 1997).

Using Cohen's definition for small effect size (d = .20) and alpha set at .05, the total sample size required to achieve the usually recommended power of .80 (Hunter, 1997; Howell, 1992; Welkowitz, Ewen, & Cohen, 1976) is 784 (total N for both groups combined) for a two-sample t test or two-sample ANOVA (Howell, 1992). With a small population effect and alpha set at .10, this number drops to 625 subjects. Using computational procedures presented in Howell (1992), power for this study with alpha set at .10 was calculated to be .26, up from .17 with the alpha set at .05. Thus, even with level of alpha set at .10, the type II error rate remains a high 74%. Neither of these situations is desirable, relative to power and Type II error rate. However, given that the entire population is used in the analyses and new states cannot be "manufactured", alpha set at .10 is necessary to somewhat respond to the inadequacy of power.

Consistent with recommendations from the publication manual of the American Psychological Association (1994), effect size information was included and interpreted. This was in addition to the traditional reporting of null-hypothesis significance tests.

CHAPTER IV

RESULTS AND DISCUSSION

This chapter presents the results of the data analyses in the development of the covariates and in the investigation of hypotheses. It concludes with a discussion of these findings.

Results of Development of Covariates

Descriptive Statistics

RSA-911 FY 1995 data were used in developing the IWDR and DP covariates. The sample included all VR clients with a primary disability of legal blindness (RSA codes 100 to 119) who were closed in the 50 states (N = 16,569). Data were examined for accuracy of data entry, missing values, and normality. All variables were screened to ensure values or codes were within appropriate ranges. If not, missing value codes were assigned. Of the total cases, 55.7% were female (n = 9,223) and 44.3% were male (n = 7,346). Approximately 80.6% of the clients were White (n = 13,357), 17.0% were African American (n = 2,811), 1.7% were Asian or Pacific Islander (n = 288), and 0.7% were American Indian/Alaskan (n = 111). Data on race were missing on two cases. Only 7.7% of the clients reported being of Hispanic origin (n = 1,280), while three cases had missing data on this variable. Approximately half of all clients had one or more secondary disability (48.6%, n = 8,051), with missing data on 12 clients (.1%). The mean age of clients was 51.0 years (SD = 21.47) and the mean education of clients was 11.7 years (SD = 3.04), with missing data on one case.

A minority of clients (25.1%, n = 4,165) obtained competitive sector placements (competitive, BEP, or self-employment) at VR closure. The remainder were either homemaker, extended employment, and unpaid family worker closures (43.5%, n = 7,208); statuses 08, 28, and 30 unsuccessful closures (31.4%, n = 5,194); or had missing data on VR outcome variables (n = 2).

The amount of missing data was small and was determined to be missing at random. As recommended by Hair, Anderson, Tatham, & Black (1995) under such circumstances, only complete cases were used in further analyses. Results from examinations for normality were satisfactory. Exploration of correlation and regression relationships between demographic and disability variables and outcome variables found assumptions of linearity and homoscedasticity to be satisfactory.

Development of the IWDR

Using client-level data from the FY 1995 RSA-911 dataset, correlations between client demographic variables and competitive sector placement were computed. Variables that distinguished between competitive/noncompetitive sector placement included (a) primary source of support at referral (R = .32), age at referral (r_{pb} = .31), marital status (R = .24), presence of secondary disability (r = .20), educational level (r_{pb} = .18) and gender (r = .15). Of these variables, source of support at referral and age at referral were most strongly associated with competitive sector placement (correlations greater than .30) and were incorporated into the Index with a maximum weight of "3". The remaining four variables were less strongly associated with competitive sector placement (correlations ranging from .15 to .24) and were incorporated into the Index with a maximum weight of "2".

The IWDR is presented in Table 4.1. Continuous, measurement-level client variables (age, educational level) and non-metric client variables (primary source of support, marital status, secondary disability, gender) were recoded into simplified, ordered ranges. These are listed on the left side of the table. Categories within each client variable were assigned weights from 0 to a maximum of 2 or 0 to a maximum of 3, depending upon the strength of their relationship with competitive sector placement. The weight assigned to each variable category and the percent of clients closed in competitive sector placements for each category are listed in columns on the right of the table. For example, a weight of "2" was assigned to those clients who reported "SSDI" as their main source of support at VR referral. Of those clients, 26.6% were closed in competitive sector employment. A weight of "3" was assigned to those clients who reported "SSI" as their main source of support at VR referral, and of those clients, only 13.5% were closed in competitive sector employment.

Table 4.1

Index of Work Disadvantage at Rehabilitation Referral

Variables	Weight	Percent Closed Competitively
Source of Support at Referral		
Self (earnings, rent, dividends, interest)	0	50.5[a]
Private (family/friends, insurance, other	2	29.9
SSDI	2	26.6
Public (SSI, AFDC, other public sources)	3	13.5
Age at Referral		
49 years or less	0	37.4
50 years through 59 years	1	25.9
60 years through 69 years	2	14.1
70 years or more	3	4.0
Marital Status at Referral		
Married/never married	0	31.2
Divorced/separated	1	25.2
Widowed	2	4.9
Secondary Disability		
No secondary disability	0	33.7
1 or more	2	16.2
Education Level		
More than 12 years	0	37.5
11, 12 years	1	23.7
Less than 11 years or special education	2	15.4
Gender		
Male	0	32.6
Female	2	19.3

Note. Scores may range from 0 to 14 with higher scores indicating lower probability of competitive closure outcome.

[a]Percentage of all legally blind clients in category who were closed in competitive, self-employed or BEP work status in FY 1995 RSA-911 Case Service Report (n = 16,569).

Table 4.2

Correlations of IWDR Variables with Competitive Sector Closure for 1995

	1	2	3	4	5	6	7
1. Source of Support	--	.17	.14	.14	.17	.10	-.28*
2. Age		--	.50	.17	.11	.24	-.33*
3. Marital Status			--	.10	.09	.30	-.23*
4. Secondary Disability				--	.10	.06	-.20*
5. Education					--	.03	-.18*
6. Gender						--	-.15*
7. Competitive Closure							--

*$p < .001$

Table 4.2 shows the correlations among IWDR client variables and between IWDR client variables and competitive sector placement at closure. Correlations between client variables and competitive sector placement ranged from $r = -.15$ (gender with competitive placement) to $r = -.33$ (age with competitive placement). In general, correlations among client variables were low. Exceptions included the correlation of marital status with age ($r = .50$), the correlation of gender with marital status ($r = .30$), and the correlation of gender with age ($r = .24$).

A total IWDR score was computed for each client by summing each item. Scores could range from 0 to 14, with higher scores indicating increased client work disadvantage and a lower probability of competitive sector placement at VR closure. The point biserial correlation of the summed IWDR scores with competitive sector placement was -.42 for FY 1995 data. (Higher IWDR scores were related to lower competitive sector placement rates.) For comparison purposes, the multiple correlation of the original 18 client variables prior to any recoding with competitive sector placement was .45. To assess generalizability of the relationship of the IWDR with competitive sector placement to other RSA-911 data, the IWDR was computed for FY 1989, 1992, and 1994 databases using the weighting and recoding scheme developed from 1995 data. All correlations of the summed IWDR scores with VR outcome (competitive

sector placement) were statistically significant ($p<.001$). Table 4.3 shows the results of this cross-validation procedure.

The final step involved computing an IWDR score for legally blind clients closed in FY 1996. Again, a total score was computed for each client by summing categories of each variable. These scores were used as the IWDR covariate in examination of the hypotheses.

Table 4.3

Point Biserial Correlations of Summed Index of Work Disadvantage Scores with Competitive Section Placement for 1989, 1992, 1994, and 1995

Fiscal Year Data	*r*	*N*
1989	-.447	12,427
1992	-.372	16,180
1994	-.390	17,271
1995	-.421	16,515

Note. All correlations are statistically significant at the $p <$ .001 level.

Development of DP Covariate

Statistical (stepwise) regression was used to select the optimum set of independent variables that maximized prediction of the independent variable, competitive sector placement. Tabachnick and Fidell (1996) have recommended statistical regression "as the surest path to the best prediction equation," (p. 150) but have cautioned that the sample from which the equation is derived should be large and representative of the population. Cohen (1991) has shown that forward stepwise regression with dummy variables having more than two categories can yield misleading conclusions. Specifically, two dummy variables corresponding to a categorical variable could be jointly significant, although individually they are not. Further, he has recommended the use of backward stepwise regression to avoid such problems, especially if the number of predictors is small relative to the number of cases. In backward stepwise selection, all of the independent variables are included in the equation (Tabachnick & Fidell, 1996). Variables not making a statistically significant contribution are then eliminated during

the stepwise process. After eliminating variables, the regression model is estimated using the remaining independent variables.

As recommended by Cohen (1991), backward elimination regression using FY 1995 data was performed between the original 18 client disability and demographic measures as independent variables (predictors) and competitive sector placement as the dependent variable (criterion). Predictors with *F* ratios whose probabilities exceeded the .05 level were removed from the equation. The resulting overall regression equation accounted for 20.0% of the variance in competitive sector placement at closure, $F(10, 16449) = 410.57$, $p = .000$. The results of the backward elimination regression are presented in Table 4.4.

Next, the multiple regression equation developed on the FY 1995 RSA-911 data was applied to the FY 1996 data. The unstandardized predicted values were computed for individual cases using the weights derived from the 1995 data. These predicted values were used as the DP covariate in examination of the hypotheses.

Table 4.4

Summary of Backward Stepwise Regression Analysis for Variables at VR Referral Predicting Placement at VR Closure for 1995

Variable	*b*	*SE*	*t* value
Primary Source of Support at Referral (Indicator coded)			
Client earnings	.240[a]	.009	26.045**
Family and friends	.024	.009	2.728*
Public assistance - SSI or AFDC	-.064	.010	6.683**
Public assistance, no federal funds	-.110	.042	-2.601*
Public institution[c]	-	-	-
Workers compensation	-.150	.054	-2.754*
SSDI[c]	-	-	-
All other public services[c]	-	-	-
Annuity/private insurance[c]	-	-	-
All other sources of support[c]	-	-	-
Marital Status (Indicator Coded)			
Married	.054	.007	8.227**
Never married[c]	-	-	-
Divorced[c]	-	-	-
Widowed[c]	-	-	-
Presence of Secondary Disabilities (Indicator Coded)	-.099	.006	15.819**
Highest Grade Completed	.016	.001	15.744**
Gender	-.055	.006	8.637**
Age at Referral	-.005	.000	32.538**

[a] Unstandardized regression coefficient.

[c] Variables not included in final regression equation, $p > .05$. Regression statistics not reported for these variables.

*$p < .01$. **$p < .001$.

Results of Hypotheses Testing

Descriptive Statistics

Fiscal year 1996 cases with a primary disability of legal blindness (RSA codes 100-119) closed from the 50 states (N = 18,827) were used to compute mean state scores on client service and outcome variables. Data were examined for accuracy of data entry and missing values. Of the total cases, 60 were missing data on age, two were missing data on educational level, there were no missing data on gender or marital status, 247 were missing data on secondary disability, 220 were missing data on earnings at closure, and 97 were missing data on competitive sector placement at closure. The amount of missing data relative to total cases was small and determined to be missing at random. Consequently, only cases with complete data were used in further analyses. Results from examinations for normality were satisfactory.

Aggregation of client data. Client level variables (number of services, case service expenditures, duration of services, mean weekly earnings at closure, and competitive sector placement), IWDR scores, DP scores, and variables necessary to identify agency structure type were aggregated to provide a mean score on each variable for each of the 50 states. These state-level aggregate data were used for all further analyses. Table 4.5 presents descriptive statistics on these variables for the two agency structure types. The intercorrelations of IWDR scores, DP scores, and the dependent variables for the aggregated sample are presented in Table 4.6.

Table 4.5

Table of Means and Standard Deviations for FY 1996 Aggregate Data

	Agency Structure Types			
	Separate (n = 25)		Combined (n = 25)	
Variables	*M*	*SD*	*M*	*SD*
Case Expenditures ($)	4,007.48	1,323.66	3,911.14	2,827.98
Duration of Services	2.14	.55	2.10	.60
Number of Services	4.67	1.06	4.28	.99
Competitive Sector Closure	.34	.13	.30	.13
Weekly earnings at Closure ($)	100.98	39.61	88.49	43.20
DP Covariate[a]	.24	.06	.25	.07
IWDR Covariate[b]	6.26	1.17	6.11	1.19

[a]Lower score indicates more disadvantage. [b]Higher score indicates more disadvantage.

Table 4.6

Intercorrelation Matrix State Aggregate Data 1996 (N=50)

	1	2	3	4	5	6	7
Cost of Services	--	.24	.27	.38**	.40**	-.27	.26
Duration of Services		--	-.01	.29*	.33*	-.28*	.25
Number of Services			--	.23	.31*	.01	-.02
Competitive Sector Closure				--	.87**	-.66**	.55**
Weekly Earnings Closure					--	-.63**	.55**
IWDR Covariate						--	-.96**
DP Covariate							--

*$p < .05$. **$p < .01$.

Hypothesis 1

The first null hypothesis stated that there would be no statistically significant differences in the number of rehabilitation services, case service expenditures, and duration of services among legally blind VR consumers across separate agency states and combined agency states. To analyze the data, a one-way multivariate analysis of covariance (MANCOVA) was conducted employing three dependent variables: case service expenditures, duration of services, and number of services. Control for client differences in work disability and demographic differences at referral was achieved by using IWDDR scores as the covariate. The independent variable, agency structure type, included two levels: separate agency states and combined agency states.

The SPSS multivariate analysis of covariance (MANCOVA) procedure was used for analysis. Alpha was set at .10. Casewise diagnostics resulted in the identification of one outlier exceeding three standard deviations in the case service expenditures variable. There were no differences in the results of analyses with and without the outlier. Examination of data indicated that the outlier represented a valid observation in the population, and therefore was retained. Results of evaluation of assumptions of normality, linearity, and homogeneity of variance-covariance matrices were satisfactory.

With the use of the Wilks' Lambda criterion, the combined dependent variables were significantly related to the IWDR covariate, Wilks' Lambda = .871, $F(1, 47) = 2.22$, $p = .099$, but the main effect of agency structure type was not significant, Wilks' Lambda = .961, $F(1, 47)$ .612, $p = .610$. Therefore, the null hypothesis was not rejected. Because omnibus MANCOVA showed no significant main effect, the remaining univariate follow-up hypotheses were not tested.

A second MANCOVA was conducted using the same independent and dependent variables. In this analysis the covariate was work disability and demographic characteristics, as measured by DP scores. The combined dependent variables were not significantly related to the DP covariate, Wilks' Lambda = .888, $F(1, 47) = 1.90$, $p = .143$ nor was the main effect of agency structure type significant, Wilks' Lambda = .961, $F(1, 47) = .605$, $p = .615$. Again, the null hypothesis was retained, and the remaining univariate follow-up hypotheses were not tested.

The appropriateness and advantage of using IWDR and DP scores as covariates were questionable, given their level of significance in the model ($p = .099$ and $p = .143$, respectively). Additional investigations indicated that work disadvantage, as measured by the IWDR or DP covariate, was

not significantly related to number of services (p = .964 and p = .914, respectively).

Hypothesis 2

The second hypothesis stated that there is no statistically significant difference in weekly earnings at VR closure among legally blind consumers across state VR structure types, after controlling for client disability and demographic characteristics. To test this hypothesis, a one-way analysis of covariance (ANCOVA) was conducted. Alpha was set at .10. Results for tests of assumptions were satisfactory. The independent variable, agency structure type, consisted of two levels: separate agency states and combined agency states. The dependent variable was weekly earnings at closure, and the covariate was work disability and demographic characteristics, as measured by IWDR scores.

After adjustment by the IWDR covariate, weekly earnings at closure differed significantly with agency structure type, F (1, 47) = 3.21, p = .080, and the IWDR covariate was significant, F (1, 47) = 35.60, p = .000. These results indicate that there was a statistically significant difference in weekly earnings at closure for agency structure types. In particular, when comparing adjusted mean differences, average weekly earnings at closure were higher in separate agency states (M = 102.76) than in combined agency states (M = 86.71).

Eta square values of .01, .06, and .14 have traditionally represented small, medium, and large effect sizes, respectively (Green, Salkind, & Akey, 1997), and will be used in further presentation and discussion of results. Thus, the strength of relationship between agency structure types and the dependent variable was determined to be of medium effect size (partial η^2 = .064), while holding constant disability and demographic characteristics.

A second ANCOVA was conducted using the same independent and dependent variables. In this analysis the covariate was work disability and demographic characteristics as measured by DP scores. After adjustment by the covariate, weekly earnings at closure was found not to be statistically significant for agency structure types with F (1, 47) = 2.69, p = .108, and the DP covariate was significant F (1, 47) = 23.00, p = .000. Unlike the previous result, a statistically significant difference was not obtained in this analysis for agency structure type. The adjusted mean weekly earnings was $102.72 in separate agency states and $86.75 in combined agency states. The measure of strength of relationship between agency structure types and the dependent variable was

moderate (partial η^2 = .054) holding constant disability and demographic characteristics.

Hypothesis 3

The third hypothesis stated that there is no statistically significant difference in competitive sector placement rates among legally blind consumers across state VR structure types, after controlling for client disability and demographic characteristics. To test this hypothesis, a one-way analysis of covariance (ANCOVA) was conducted with alpha level set at .10. Tests of assumptions were satisfactory. The independent variable, agency structure types, consisted of two levels: separate agency states and combined agency states. The dependent variable was competitive sector placement at closure, and the covariate was work disability and demographic characteristics as measured by IWDR scores. After adjustment by the covariate, competitive sector placement was found to be statistically significant for agency structure types, $F(1, 47) = 4.17$, $p = .047$. The IWDR covariate was also statistically significant $F(1, 47) = 42.04$, $p = .000$. Specifically, separate agency states had the higher adjusted placement rate ($M = .348$) and combined agency states had the lower adjusted placement rate ($M = .293$). The strength of relationship between agency structure type and the dependent variable was medium (partial η^2 = .082) holding constant disability and demographic characteristics.

A second ANCOVA was conducted using the same independent and dependent variables. In this analysis the covariate was work disability and demographic characteristics, as measured by DP scores. After adjustment by the covariate, competitive sector placement was found to be statistically significant for agency structure types with $F(1, 47) = 3.20$, $p = .080$. The DP covariate was also statistically significant $F(1, 47) = 23.23$, $p = .000$. These results also indicate that agency structure types significantly affect competitive sector placement rates. When comparing adjusted mean differences, separate agency states had the higher competitive sector placement rate ($M = .347$), and combined agency states had the lower competitive sector placement rate ($M = .294$). Again, the strength of relationship between agency structure types and the dependent variable was moderate (partial η^2 = .064), holding constant disability and demographic characteristics.

Discussion

The purpose of this study was to determine if significant differences existed between separate and combined agency states in the VR services received and outcomes achieved by legally blind consumers closed from the state-federal VR program, after controlling for preexisting differences in client work disability and demographic characteristics at referral. All participants in this study were legally blind clients closed from the state-federal VR system. Although previous research has examined the relationship between agency structure types and client services and outcomes for VR consumers who are blind or visually impaired, none has accounted for preexisting client differences on disability and demographic variables that may effect VR outcome. This study extends previous investigations by including consideration and control of such relationships in the analyses.

Utility of the Covariates

The IWDR and DP covariates were derived by assessing the contribution of the following client disability and demographic characteristics known at VR referral to competitive sector placement at closure: primary source of support, age, marital status, presence of secondary disability, gender, and educational level. Results indicated that the IWDR covariate was significantly correlated with the DP covariate (r = -.96) and that both covariates were similar in their ability to predict competitive sector outcome and weekly earnings at VR closure. These comparable results provide concurrent validity for the IWDR and suggest that minimal predictive value is lost when using the less complicated and easily computed Index to control for client disability characteristics in investigations of VR outcome (competitive closure and weekly earnings).

Neither covariate was found to be adequately reliable for covariance analysis in predicting differences in service variables. This was not surprising given their low relationship with all three service variables, and in particular their low relationship with the "number of services" variable.

Differences in Services

The current study did not find any statistically significant differences in the combined dependent service variables (number, duration, and expenditures) provided to legally blind clients in separate agency states

and combined agency states using state-level aggregate data. Further, an assessment of the power of the IWDR and DP covariates to adjust the dependent variables indicated that neither was effective in markedly improving the sensitivity of the statistical tests. While both covariates provided a composite score of client disability and demographic characteristics, their usefulness in investigating this hypothesis would require a stronger relationship with the dependent measures.

Although multivariate tests have not been employed in previous investigations of service variables across VR agency types, univariate differences in service variables have been reported. For example, Cavenaugh & Pierce (1998), JWK International (1981), and NAC (1997) reported that mean case expenditures for legally blind clients were higher in separate agencies than in combined or general agencies. With respect to duration of services, these same studies reported small or little differences in the length of time in services across agency structure types. In addition, Cavenaugh and Pierce (1998) found that mean number of services was higher in separate agencies than in other agency structure types. Given that results of the current study do not support this previous research, it is likely that power (the probability of correctly rejecting the null hypothesis when it is false) was not adequate to find statistically significant differences. This explanation is consistent with results indicating a small to moderate relationship (partial $\eta^2 = .04$) between the combined service variables and agency structure types when controlling for either covariate. In addition, the direction of the effect was consistent with previous findings.

Differences in Outcomes

Results of the current study indicated that weekly earnings reported by blind clients at VR closure were significantly higher in separate agency states than in combined agency states. This was found while holding constant disability and demographic characteristics as measured by the IWDR covariate. However, this difference in weekly earnings was not statistically significant in the analysis using the DP covariate. The NAC study (1997) was the only other study identified in the literature review that examined differences in weekly earnings across agency structure types. Although no attempt was made to control for client differences, the NAC study found that legally blind clients in separate agencies had higher earnings at closure than legally blind clients in general agencies.

The current study found that state-level competitive sector placement rates of blind clients were significantly higher in separate agency states

than in combined agency states, when controlling for client disability and demographic differences. These differences were statistically significant using either IWDR or DP scores as the covariate. Similar results were also reported in the NAC (1997) study and by Cavenaugh and Pierce (1998).

Although the investigation of differences in client earnings and competitive sector placement at closure across agency structure types yielded somewhat mixed results, depending upon the inclusion of the IWDR covariate or the DP covariate in the model, similar effect size statistics were found in all four analyses. These analyses yielded approximately medium effect size differences. Bohrnstedt and Knoke (1994) " . . . view statistical significant testing as an adjunct to the most essential goal of social data analysis: estimating the strength of relationships among variables" (p. 23). Findings of moderate effect sizes, along with statistical significance contributes to the practical significance of the results (Cohen, 1994; Hunter, 1997; & Thompson & Snyder, 1998).

Findings Across Studies

In addition to the aforementioned concerns regarding statistical power, other reasons may explain differences in findings from the current study and those from previous studies of VR agency structure types. First, different classification methods have been used across studies in determining VR agency structure types. For example, JWK International (1981) categorized VR agencies into three structure types in their analyses of RSA-911 data. Kirchner and Peterson (1982), NAC (1997), and Cavenaugh and Pierce (1998) used the RSA designation of "Blind" and "General" in their analyses of RSA-911 data. The current study used a different approach in identifying states (not agencies) as the unit of analysis (i.e., legally blind clients were served in either a separate agency state or a combined agency state).

Other possible explanations could be related to use of RSA-911 data from different years. In addition, other studies (Cavenaugh & Pierce, 1998; JWK, International, 1981; Kirchner & Peterson, 1982; NAC, 1997) have considered RSA-911 data as population data rather than sample data. Thus tests of statistical significance were not used in determining differences in agency structure types.

Limitations

Although efforts were made to reduce extraneous sources of variance (e.g., restricting the sample to only legally blind consumers and excluding other visually impaired consumers and choosing a statistical procedure designed to control for preexisting differences in client characteristics known at VR referral), limitations of this study must be noted. First, some limitations emanate from the use of aggregated state data, rather than client-level data as the unit of analysis. Because individual FY 1996 case data were aggregated to create a single mean score for each state on all variables, results are representative of the state aggregate measures of each variable for the agency structure types and cannot be generalized to the population of client-level measures of legally blind clients closed from the VR program. In the aggregation process, all states, regardless of numbers served, were given the same weight in the analyses. For example, Wyoming with .1% of all closed cases (n = 11) and Texas with 12.8% of all cases (n = 2,454) were equally represented in the analyses. Further, correlations and other measures of association were attenuated by the range restrictions brought about by the aggregation process. This loss of variation in data could also mask possible patterns of non-linear relationships existing between variables at the client level that might not be evident in the aggregate data set.

Another limitation is related to the low statistical power of this study to detect hypothesized differences. Kosciulek and Szymanski (1993) have noted that small effect sizes are common in rehabilitation research and have recommended that researchers conduct preanalysis power estimations as a necessary component of research design. Further, they have recommended that the significance level (alpha) be adjusted when power is low and the sample number cannot be increased. Statistical power is the "probability of finding relationship and differences in sample data that actually exist in the population" (Szymanski & Parker, 1992, p. 3). This study did not have the "luxury" of having large samples to work with; for example, the number of states could not be increased. Even with the alpha level increased to .10 to improve statistical power, there remained only a 26% chance of finding statistically significant results assuming small effects and only a 55% chance assuming medium effects.

Another limitation relates to use of competitive sector placement as the single outcome criterion in development of the covariates. While closure into competitive, self- or BEP employment has been identified as a "primary performance indicator" in the proposed regulations governing evaluation of state-federal VR programs, this single measure does not address quality of outcome concerns. Primary performance indicators

are defined in the regulations as those particularly representative of the central purpose of the VR program (Proposed VR Standards and Indicators, 1998).

Further, only data contained in the RSA-911 reports were considered for analyses. This restriction resulted in the exclusion of, or lack of control for, other variables that might have influenced VR services and outcome, including counselor characteristics (Rehab Brief, 1992; Szymanski & Parker, 1989), client satisfaction (Farley, Bolton, & Taylor, 1993; Tucker & Abrams, 1997), and attitudinal or other environmental barriers (Crudden, McBroom, Skinner, & Moore, 1998).

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This chapter is subdivided into three sections. These sections include (a) a brief summary of the first four chapters, (b) practical and theoretical implications or conclusions, and (c) suggestions for additional research.

Summary

Theoretical Basis of Research

Recognized leaders in the field of blindness rehabilitation agree that state agencies specifically established to serve VR consumers who are blind or visually impaired are crucial to the continued access of specialized blindness services and quality outcomes (Edwards, 1997; Gallagher, 1988, Jernigan, 1996). Accordingly, consumers and practitioners have joined to advance a common theory of blindness rehabilitation. Their efforts culminated in the unanimous adoption by blindness organizations in the United States and in Canada of a position statement containing a list of a priori assumptions and basic principles for the rehabilitation of persons who are blind or visually impaired (Joint Organizational Effort, 1994). A major philosophical assumption underlying the theory is that blind persons have unique rehabilitation needs and are best served in identifiable VR agencies, especially established to serve them. This functional perspective (see Bailey, 1994) is useful in explaining the emergence and continued existence of separate (blindness-only) agencies serving blind consumers. That is, separate agencies were initially established in response to the failure of VR agencies to address rehabilitation needs of blind consumers. Further, the continued existence of separate agencies is dependent on their continuing to perform an important function in society. Although separate agencies are overwhelmingly supported within the blindness rehabilitation community, there has been little empirical research supporting their effectiveness.

Purpose and Hypotheses

The purpose of this study was to determine if differences exist in services received and outcomes achieved by legally blind consumers across across VR agency structure types. It is critical that VR professionals and consumers with disabilities base their positions on the need for blindness-only VR agencies on more than their personal interpretations of individual experiences. Further, results of this research can assist public policymakers in their determination of the efficacy and value of maintaining separate state agencies serving blind persons. The hypotheses examined the differences in VR services (expenditures, number, and duration) and outcomes (competitive sector placement and earnings at closure) for legally blind clients across separate and combined agency states. The current study also attempted to control for preexisting client differences by incorporating a disability and demographic covariate in the design model.

Literature Review

Although states received federal funding for the vocational rehabilitation of individuals with disabilities as early as 1920, blind applicants were routinely considered vocationally unfeasible until after the passage of the Barden-LaFollette Act of 1943 (P.L. 79-113) (Koestler, 1976). This Act allowed states to designate existing commissions or agencies serving blind people to administer VR services for consumers who are blind or visually impaired. Currently in 25 states, two agencies are designated to administer the state-federal VR program, one of which serves blind consumers and the other of which serves consumers with other disabilities. In the remaining 25 states, one agency is designated to provide services to consumers with all types of disabilities.

The majority of consumers and practitioners in blindness rehabilitation overwhelmingly support the delivery of services in specialized agencies specifically established to serve blind persons (Edwards, 1997; Jernigan, 1996: Joint Organizational Effort, 1994; NCSAB, 1994), while rehabilitation consumers and practitioners with other disabilities generally support cross-disability programs (NCDb, 1998). The paucity and mixed results of research regarding the efficacy of blindness-only VR agencies has hampered objective dialogue within the disability community regarding the continued funding of separate VR agencies for blind persons.

Both JWK International (1981) and Kirchner and Peterson (1982) found small or no differences in outcomes across agency types. NAC

(1997) and Cavenaugh and Pierce (1998) found that legally blind clients of separate agencies are more likely to be competitively employed than legally blind clients of combined agencies. In addition, Cavenaugh and Pierce (1998) and Kirchner and Peterson (1982) found that blind or visually impaired clients who were served in separate agencies had more severe vision loss, were older, more likely to be African American, and more likely to be female than blind or visually impaired clients served in combined agencies.

Methodology

An ex post facto research design was used to investigate differences in services and outcomes of legally blind VR consumers across separate and combined agency states, while controlling for preexisting differences in client disability and demographic differences. RSA-911 FY 1995 data were used to identify client disability and demographic characteristics reported at VR referral that were related to competitive sector placement at closure. These client characteristics included: primary source of support at referral, age, marital status, secondary disability, gender, and educational level. These were weighted according to the magnitude of their relationship with competitive closure and incorporated into the IWDR, an index of work disadvantage. A summed IWDR score for each case was computed. Following a cross-validation procedure using FY 1989, 1992, and 1994 RSA-911 data, the IWDR was applied to FY 1996 data. IWDR scores were generated for each case and used as a covariate in investigating the hypotheses.

A second disability and demographic score was used to further assess the validity of the IWDR as a covariate in testing of the hypotheses. Again using FY 1995 data, a stepwise multiple regression was performed between the six client characteristics as independent variables and competitive sector placement at closure as the dependent variable. This multiple regression equation was applied to the FY 1996 data to compute the unstandardized predicted value (DP score) for each case. These DP scores were used as a second demographic covariate in testing the hypotheses.

All legally blind clients closed in FY 1996 in the 50 states were categorized as receiving services in separate agency states (n = 25) or as receiving services in combined agency states (n = 25). Data on services (expenditures, duration, and number), outcomes (competitive sector placement and earnings at closure), and the two covariates (IWDR and DP scores) were aggregated to provide a mean variable score for each of the 50 states. In testing the first hypothesis, a one-way MANCOVA was

conducted to determine if statistical differences existed in the number of services, duration of services, and case service expenditures reported by separate agency states and combined agency states in serving legally blind VR clients, while controlling for preexisting differences in client disability and demographic characteristics. In testing the second hypothesis, a one-way ANCOVA was conducted to determine if statistical differences existed in client earnings at closure reported by separate and combined agency states in serving legally blind VR clients, while controlling for preexisting differences in client disability and demographic characteristics. In testing the third hypothesis, a one-way ANCOVA was conducted to determine if differences existed in competitive sector placement rates reported by separate and combined agency states in serving legally blind VR clients, while controlling for preexisting differences in client disability and demographic characteristics. All three hypotheses were tested twice–one time with IWDR scores as the covariate in the model and a second time with DP scores as the covariate in the model.

Findings

Results of the MANCOVA determined that the combined dependent service variables (number, duration, and expenditures) were not statistically significantly related to agency structure types after adjusting for client differences on the IWDR covariate. These same results were obtained with MANCOVA after adjusting for the DP covariate. Therefore, the null hypothesis was retained and follow-up univariate procedures were not conducted. In testing the second hypothesis, results of the one-way ANCOVA indicated that mean client earnings at closure was statistically significantly higher in separate agency states than in combined agency states after adjusting for client differences on the IWDR covariate. In a separate ANCOVA, mean client earnings at closure was not found to be significantly affected by agency structure types after adjusting for differences on the DP covariate. In testing the third hypothesis, results of the ANCOVA indicated that the mean competitive sector placement rate of legally blind clients was statistically significantly higher in separate agency states than in combined agency states after adjusting for client differences on the IWDDR covariate. In a separate ANCOVA, these same results were found using the the DP covariate.

Conclusions

For more than two decades after the passage in 1920 of the first civilian vocational rehabilitation program, blind people were generally presumed unemployable by VR agencies. With the Barden-LaFollette Act of 1943, Congress responded to the failure of VR agencies to address the rehabilitation needs of blind consumers by allowing states to designate separate agencies to administer VR programs serving blind individuals. In response to questions regarding the efficacy of these separate agencies in serving blind consumers, findings from the current research indicate that when controlling for preexisting differences in client characteristics, states with separate VR agencies have higher competitive placement rates for legally blind consumers than states with combined agencies. Further, there appears to be evidence that client earnings at closure are also higher in separate agency states than in combined agency states.

In addition, the population effects of agency structure types on services, competitive sector placement, and earnings of blind VR consumers were estimated to be of small to median size. Small observed effect sizes are common in ex post facto research (Cohen, 1988) and ". . . do not necessarily diminish the actual relationship. Rather, they may indicate the presence of other factors that influence the relationship under consideration" (Szymanski, 1997, p. 1).

Proposed regulations for evaluation standards and performance indicators for the state-federal VR system were recently published in the Federal Register by the Commissioner of RSA (Proposed Rules, 1998). The first of the two proposed evaluation standards measures employment outcome as the percentage of all clients closed into competitive, self-, or BEP employment. It is noteworthy that the current study used this same measure in investigating outcomes and found that placement rates were higher in separate agency states than in combined agency states.

These findings support a functional explanation for the emergence of and the continued existence of separate VR agencies and thus, have theoretical as well as practical implications. That is, functional theory would posit that separate agencies were legislated into existence because of the failure of combined agencies to meet the VR needs of blind consumers. Further, separate agencies continue to exist because they are more successful than combined agencies in rehabilitating blind persons and will continue to exist only if they serve this purpose. In addition, these findings suggest that consumers with other equally significant disabilities might also realize better VR outcomes if served in specialized VR programs.

Nevertheless, the use of these results should be tempered by an awareness that (a) consumer characteristics, (b) the diversity of specialized blindness service within both separate and combined agencies, and (c) other environmental factors combine to form complex interactions influencing VR services and outcomes. Quality of agency personnel, presence and power of consumer organizations, economics, changes in public policy, opportunities for specialized itinerant and center-based services, and ongoing agency organizational changes are but a few of the variables which combine to forge a unique VR experience for each consumer.

In addition, it is important to note that separate agencies exist in a political climate hostile to categorical service delivery models and that some disability groups have argued against continued federal funding of blindness-only VR agencies. Given the highly political nature of the separate versus combined agency debate, it is conceivable that current public policy supporting specialized disability programs will be reversed without regard to its impact on the rehabilitation outcomes of blind persons. That is, future changes in disability policy may be in response to the belief, held by some, of the inherent discriminatory nature of specialized programs providing services to persons with disabilities, rather than any findings of the effectiveness or lack of effectiveness of VR programs. For example, Schriner, Rumrill, and Parlin (1995) have contended that specialized service in segregated settings result in generalized programs excluding persons with disabilities. In response, they have proposed a major shift in current disability policy that chiefly focuses on maintenance of separate programs (such as the current state-federal VR system) to one that will primarily focus on the inclusion of individuals with disabilities in generalized programs (e.g., mainstream employment, educational, and health programs serving all citizens).

Certainly, inclusion of blind or visually impaired persons in mainstream settings is consistent with the civil rights perspective of the Americans with Disabilities Act (1990) and is embraced within the blindness community. At the same time, inclusion in mainstream settings without regard to the provision of appropriate blindness-related accommodations will likely not be accepted.

With a 1994 estimated labor force participation rate of only 28.9% for blind persons (Truppin, Sebesta, Yelin, & LaPlante, 1997), rehabilitation professionals, consumers, and policy makers must focus on identifying and implementing VR strategies that will enhance employment opportunities of blind consumers. It is critical that researchers provide accurate and timely information to assist them in their investigations. Whatever policy approach is taken, it is hoped that this research will

complement our collective understanding of the effects of VR agency structure types and will be used to support disability policy that will positively impact the lives of individuals who are blind or visually impaired.

Recommendations for Further Research

Although the latest available data from RSA were used in this research, there is a strong need for additional research of RSA-911 data from previous fiscal years and of new data as it is released. Thus, it is recommended that subsequent analyses of separate and combined agencies examine the following questions:

1. What are the differences within and between agency structure types on factors not included in RSA databases that also influence rehabilitation outcomes, such as consumer satisfaction, presence of specialized itinerant and center-based staff (e.g., rehabilitation teacher, orientation and mobility instructor, assistive technology specialist, low vision specialist, placement specialist), average caseload size, qualifications of professional staff, inservice training opportunities, school to work transition programs, rural and urban issues, and other environmental barriers (e.g., lack of accessible transportation, high unemployment rates)?
2. Do agency structure types differ on evaluation standards and performance indicators included in regulations governing the state-federal VR program?
3. In response to "unit of analysis" questions, are results from the current analyses of RSA-911 state aggregate data consistent with findings from studies using a hierarchical linear model that groups (nests) client-level data within agency structure types?
4. Do extensive descriptions of the data (e.g., percentages, means, and standard deviations, with attention to effect sizes) from multiple years of RSA-911 data show consistent trends in service and outcome variables across agency structure types?
5. Given that an equal number of states administer either separate (blindness-only) or combined (cross-disability) VR agencies, what factors contribute to separate agency states serving approximately 60% of all legally blind clients?
6. For those legally blind clients identified as the most work disadvantaged at referral, what service factors (e.g., combinations, expenditures, duration of services) significantly predict VR outcome.

REFERENCES

American Psychological Association. (1994). *Publications manual of the American Psychological Association* (4th ed.). Washington, DC: Author.

Americans with Disabilities Act of 1990, 42 U.S.C. § 12101 *et. seq.*

Ary, D., Jacobs, L. C., & Razavieh, A. (1990). *Introduction to research in education* (4th ed.). Fort Worth, TX: Holt, Rinehart, and Winston, Inc.

Augusto, C. R. (1997, Winter). Why we need specialized services. *AFB News, 32*(1).

Barden-LaFollette Act of 1943, 29 U.S.C. § 31 *et seq.*

Bauman, M. K., & Yoder, M. (1966). *Adjustment to blindness reviewed.* Springfield, IL: Thomas.

Bellini, J., Neath, J., & Bolton, B. (1995a). Development of a scale of social disadvantage for vocational rehabilitation. *Journal of Rehabilitation Administration, Inc., 19*(2), 107-118.

Bellini, J., Neath, J., & Bolton, B. (1995b). A comparison of linear multiple regression and a simplified approach in the prediction of rehabilitation outcomes. *Rehabilitation Counseling Bulletin, 39*(2), 151-161.

Bolton, B. (1979a). Assessment of outcomes. *Rehabilitation Counseling Research.* Baltimore: University Park Press.

Bolton, B. (1979b). Prediction of outcomes. *Rehabilitation Counseling Research.* Baltimore: University Park Press.

Bolton, B., & Parker, R. M. (1998). Research in rehabilitation counseling. In R. M. Parker & E. M. Szymanski (Eds.), *Rehabilitation counseling: Basics and Beyond* (pp. 437-470). Austin, TX: pro-ed.

Borg, W. R., & Gall, M. D. (1989). *Educational research: An introduction.* 4th ed.). New York: Longman.

Bohrnstedt, G. W., & Knoke, D. (1994). *Statistics for social data analysis* (3rd edition). Itasca, IL: F. E. Peacock Publishers, Inc.

Cavenaugh, B. S., & Pierce, S. J. (1998). *Characteristics, services, and outcomes of rehabilitation consumers who are blind or visually impaired served in separate and general agencies* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Clunk, J. F. (1966). Influence of the Randolph-Sheppard Act on the employment of blind persons. *AAWB Blindness Annual,* 137-146.

Cohen, A. (1991). Dummy variables in stepwise regression. *American Statistician,45*(3), 226-231.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (3rd ed.). New York: Academic.

Cohen, J. (1994). The earth is round ($p < 05$). *American Psychologist, 49,* 997-1003,

Cook, D. W., & Bolton, B. (1992). Rehabilitation counselor education and case performance: An independent replication. *Rehabilitation Counseling Bulletin, 36*(1), 37-43.

Crudden, A., McBroom, L. W., Skinner, A. L., & Moore, J. E. (1998). *Comprehensive examination of barriers to employment among persons who are blind or visually impaired.* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Edwards, P. (1997, March). Testimony delivered to the National Council on Disability. Testimony delivered at the NCD quarterly meeting, Albuquerque, NM.

Farley, R. C., Bolton, B., & Taylor, J. K. (Fall, 1993). The effects of vocational development of a strategy for empowering and involving consumers in the vocational evaluation process. *Vocational Evaluation and Work Adjustment Bulletin,* 97-99.

Gallagher, W. F. (1988). Categorical services in the age of integration: Paradox or contradiction? *Journal of Visual Impairment and Blindness, 82*(6), 226-229.

Giesen, J. M., & D'Amato, R. C. (1992). *Dimensions of service delivery to blind clients of vocational rehabilitation and implications for employment outcomes* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Giesen, J. M., Graves, W. H., Schmitt, S., Lamb, A. M., Cook, D., Capps, C., & Boyet, K. (1985). *Predicting work status outcomes of blind/severely visually impaired clients of state rehabilitation agencies* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Giesen, J. M., & McBroom, L. W. (1986). *The blind homemaker closure: A multivariate analysis* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Green, S. B., Salkind, N. J., & Akey, T. M. (1997). *Using SPSS for Windows: Analyzing and understanding data.* Upper Saddle River, NJ: Prentice-Hall.

Hair, J. F., Jr., Anderson, R. E., Tatham, R. L., & Black, W. C. (1995). *Multivariate Data Analysis* (4th ed.). Englewood Cliffs, NJ: Prentice-Hall.

Hill, M. A. (1989). Work status outcomes of vocational rehabilitation clients who are blind or visually impaired. *Rehabilitation Counseling Bulletin, 32,* 219-230.

Hopkins, K. (1991). *The studies of service delivery systems in rehabilitation of the blind and visually impaired.* Northridge, California: California Council of the Blind.

Howell, D. C. (1992). *Statistical methods for psychology* (3rd ed.). Boston: PWS-KENT.

Hunter, J. E. (1997). Needed: A ban on the significance test, *Psychological Science, 8*(1), 3-7.

Jernigan, K. (1986, August-September). Blindness–A left-handed dissertation, *Braille Monitor,* 371-377.

Jernigan, K. (1996, December). How can specialized agencies for the blind be saved, *Braille Monitor*, 629-636.

Joint Organizational Effort, 1994. *Specialized rehabilitation services for blind and visually impaired: A position statement.*

JWK International Corporation (1981). *Evaluation of RSA programs for blind and visually handicapped persons.* Annandale, VA: Author.

Kirchner, C. (1982). Effects of state agency structures on VR services for blind and visually impaired persons: Part 1. *Journal of Visual Impairment and Blindness, 76*(1), 31-33.

Kirchner, C., & Peterson, R. (1982). Effects of state agency structures on VR services for blind and visually impaired persons: Part II. *Journal of Visual Impairment and Blindness, 76*(2), 73-78.

Koestler, F. A. (1976). *The unseen minority.* New York: David McKay Company, Inc.

Kosciulek, J. F., & Szymanski, E. M. (1993). Statistical power analysis of rehabilitation counseling research. *Rehabilitation Counseling bulletin, 36*(4), 212-211.

Kunce, J. T., & Miller, D. E. (1972). Simplified prediction: A follow-up study. *Journal of Counseling Psychology, 19*(6), 505-508.

LaPlante, M., Kennedy, J., & Trupin, L. (1996). Income and program participation of people with work. *Disability Statistics Report* (9). Washington, DC: U.S. Department of Education, National Institute on Disability and Rehabilitation Research.

Lewis, F. O., & Bolton, B. (1986). Latent structure modeling of occupational attainment by vocational rehabilitation clients. *Rehabilitation Counseling Bulletin, 29*, 166-172.

Lewis, S., & Petterson, J. B. (1998). Rehabilitation counselors and rehabilitation teachers in state vocational rehabilitation agencies. *Journal of Visual Impairment and Blindness, 92*(3), 135-145.

Magers, G. A. (1969). State agencies serving the blind and visually handicapped. *AAWB Blindness Annual.* Washington D.C., 53-88.

Magers, G. A. (1978). The impact of employment of a changing population of blind persons in the U. S. work force. *AAWB Blindness Annual.* Washington D.C., 68-76.

Management Services Associates. (1975). *Study of the organization, service delivery, evaluation of programs to effectively serve the blind.* Austin, TX: Author.

Moore, J. E., Huebner, K. M., and Maxson, J. H. (1997). Service systems and resources. In J. E. Moore, W. H. Graves, and J. B. Patterson (Eds.), *Foundations of Rehabilitation Counseling with Persons who are Blind or Visually Impaired.* New York: American Foundation for the Blind.

Moriarty, J. B., Walls, R. T., & McLauglin, D. E. (1988). Employability of clients served in state vocational rehabilitation agencies: A national census. *Rehabilitation Counseling Bulletin, 32(2),* 108-121.

National Accreditation Council for Agencies Serving the Blind and Visually Handicapped. (1997). *Outcomes achieved by consumers with vision loss served by specialized and general state VR agencies, FY 1994.* New York: Author.

National Council on Disability. (1997a). *Reauthorization of the Rehabilitation Act: A report of the Public Policy Committee National Council on Disability.* Washington, DC: Author.

National Council on Disability. (1997b). *A statement by the National Council on Disability explaining its process and actions on the Rehabilitation Act issue of "separate agencies for the blind" and the Rehabilitation Act program of "Independent Living Services to Older Blind Individuals."* Washington, DC: Author.

National Council of State Agencies for the Blind. (1994). *Position statement on specialized service programs.*

Obermann, C. E. (1965). *A history of vocational rehabilitation in America.* Minneapolis, MN: Denison & Company.

Proposed Rules: Evaluation standards and performance indicators for the Rehabilitaton Act Amendments of 1998, *Federal Register, 63*(198), October 14, 1998, Office of Special Education and Rehabilitative Services, Department of Education.

Randolph, J. (1965). The story of the Randolph-Sheppard Act, *AAWB Blindness Annual.* Washington D.C.,1-15.

Randolph-Sheppard Act of 1936, 20 U.S.C. §§ 107, 107a-f.

Rehabilitation Act Amendments of 1998, 102 Stat. 354.

Rehabilitation Act of 1973, as amended in 1992, Pub. L. 102-569, § 7, 25 Stat. 354 (1993).

Rehab Brief (1992). *Counselor characteristics and rehabilitation outcomes.* (Vol. XIV, No. 1, pp. 1-4). Washington, DC: United States Department of Education, Rehabilitation Services Administration.

Rives, L. H. (1966). The story of a law. *AAWB Blindness Annual.* Washington DC, 1-14.

Rusalem, H. (1961). A hard look at research on blindness. *The New Outlook for the Blind, 55*(4), 115-120.

Rubin, S., & Roessler, R. T. (1995). *Foundations of the Vocational Rehabilitation Process* (4th ed.). Austin, TX: pro-ed.

Schriner, K. F., Rumrill, P., & Parlin, R. (1995). Rethinking disability policy: Equity in the ADA era and the meaning of specialized services for people with disabilities. *Journal of Health and Human Services Administration, 17,* 478-500.

Schroeder, Fredric K., (1998). Streamlining the state-federal vocational rehabilitation program (RSA Commissioner's Comments). *American Rehabilitation, 23*(2), 1.

Seekins, T. (1992). *Rural and urban employment patterns: Self-employment as a metaphor for rural vocational rehabilitation.* Missoula: University of Montana, Rural Institute on Disabilities.

Seelman, K. D. (1998). *Change and challenge: The integration of the new paradigm of disability into research and practice.* Available: http://www.ncddr.org/speeches/ncre

Smith-Fess Act (Vocation Rehabilitation of Persons Disabled in Industry Act of 1920), 41 Stat. 735.

Spungin, S. J. (1997). A joint effort to save specialized services for adults who are blind or visually impaired. *JVIB News Service, 91*(3), 4.

Stevens, J. (1986). *Applied Multivariate Statistics for the Social Sciences.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Szymanski, E. M. (1997, March). *The relationship of counselor education to client outcome in public rehabilitation.* Paper presented at meeting of the National Council on Rehabilitation Education, Washington, DC.

Szymanski, E. M., & Parker, R. M. (1989). Relationship of rehabilitation client outcome to level of rehabilitation counselor education. *Journal of Rehabilitation, 44*(4), 32-36.

Szymanski, E. M., & Parker, R. M. (1989). Low statistical power. A blight on research. *Rehabilitation Counseling Bulletin, 36,* 2.5.

Tabachnick, B. G., & Fidell, L. S. (1996). *Using Multivariate Statistics* (3rd ed.). New York: HarperCollins.

Talor, C., Maxson, J., Johnson, C., & Robertson, C. (1996). *Relationships of participant selection and cost factors across agency types* (Technical Report). Mississippi State: Mississippi State University, Rehabilitation Research and Training Center on Blindness and Low Vision.

Thompson, B., & Snyder, P. A. (1998). Statistical significance and reliability analyses in recent *Journal of Counseling & Development* research articles, *Journal of Counseling & Development, 76*(4), 436-441.

Trupin, L., Sebesta, D., Yelin, E., & LaPlante, M.P. (1997). Trends in labor force participation among persons with disabilities, 1983-1994. *Disability Statistics Report,* (10). Washington, DC: U.S. Department of Education, National Institute on Disability and Rehabilitation Research.

Vandergoot, D. (1987). Review of placement research literature: Implications for research and practice. *Rehabilitation Counseling Bulletin, 30*(4), 243-272.

Wagner-O'Day Act of 1938, 41 U.S.C. §§ 46-48.

Welkowitz, J., Ewen, R., & Cohen, J. (1982). *Introductory statistics for the behavioral sciences* (3rd ed.). New York: Academic Press.

Workforce Investment Act of 1998, Pub. L. No. 105-220, § 401 *et seq.* Stat. 936 (1998).

Wright, G. N. (1980). *Total rehabilitation.* Boston: Little, Brown and Company.

APPENDIX A

SEPARATE AND COMBINED AGENCY STATES

Table A.1

Separate and Combined Agency States (N = 50)

Separate Agency States	Combined Agency States
Arkansas	Alaska
Connecticut	Alabama
Delaware	Arizona
Florida	California
Idaho	Colorado
Iowa	Georgia
Kentucky	Hawaii
Maine	Illinois
Massachusetts	Indiana
Michigan	Kansas
Minnesota	Louisiana
Missouri	Maryland
Nebraska	Mississippi
New Jersey	Montana
New Mexico	Nevada
New York	New Hampshire
North Carolina	North Dakota
Oregon	Ohio
Pennsylvania	Oklahoma
South Carolina	Rhode Island
South Dakota	Tennessee
Texas	Utah
Vermont	West Virginia
Virginia	Wisconsin
Washington	Wyoming

Note. Agency structure designations are based on 1996 "State Plans" filed with Rehabilitation Services Administration.

MISSISSIPPI STATE
UNIVERSITY
SERVICE
RESEARCH
TEACHING
1878

72

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

	This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.
X	This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").